Skyscrapers and Spaciousness

(See page 89)

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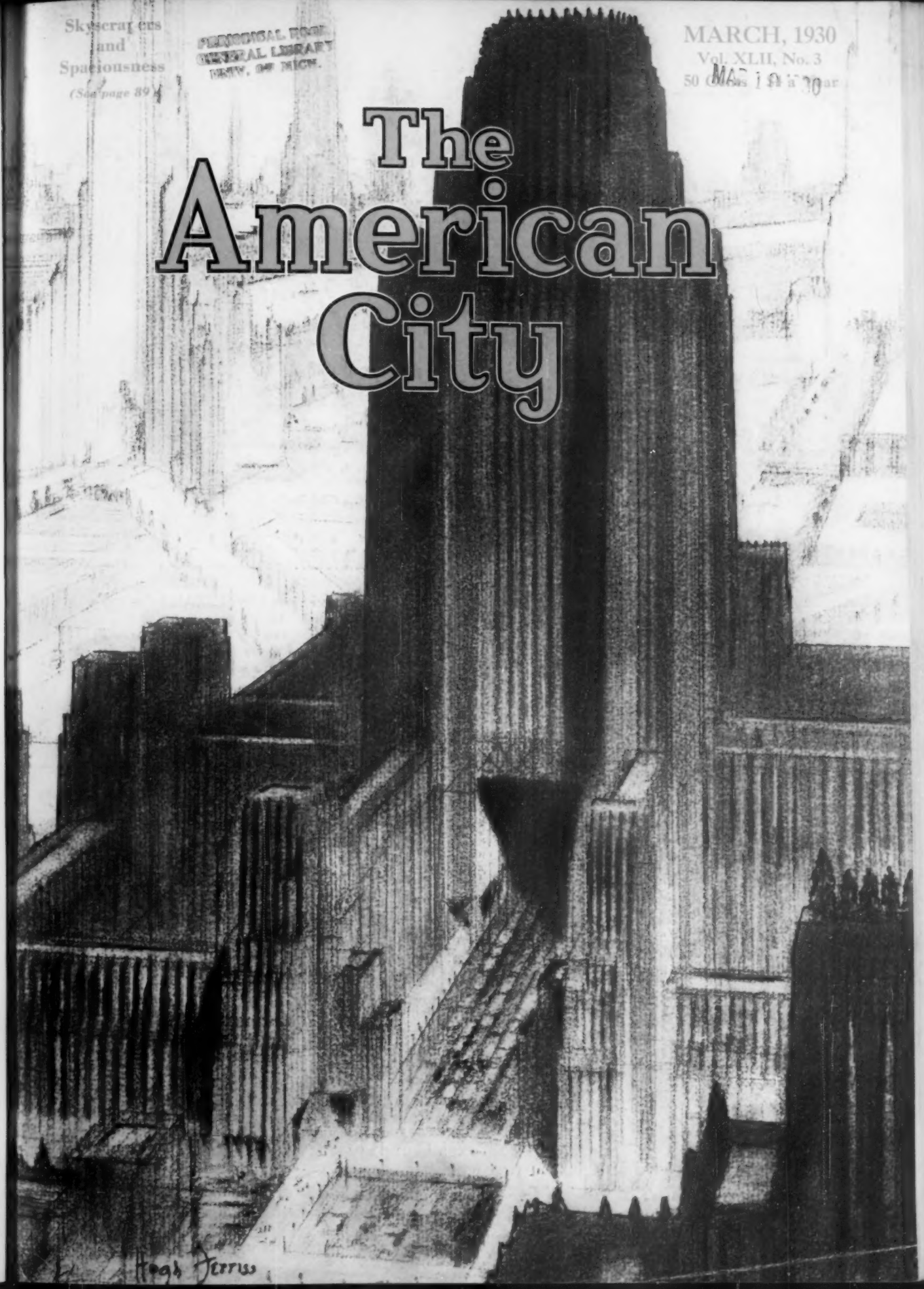
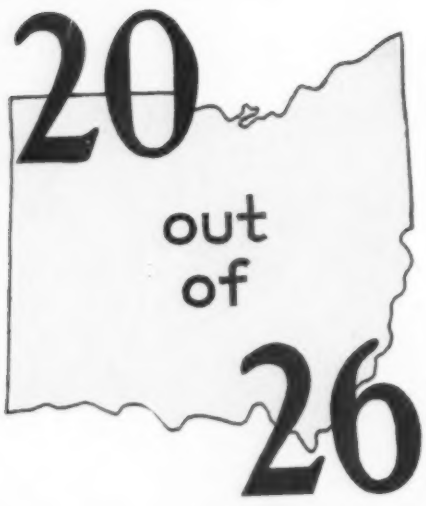
The American City





It's three-to-one among OHIO'S chief cities

Only one other State boasts more cities of over 25,000 population than Ohio. Ohio has produced 26 cities of this size; Massachusetts, 29.

Among these 26 outstanding cities of Ohio, there is the same marked approval of TEXACO Asphalt paving found among leading cities generally. Of the 26, 20 today have TEXACO-paved thoroughfares. The vote, therefore, is three-to-one for TEXACO in Ohio.

The popularity enjoyed by TEXACO Asphalt paving among Ohio's foremost cities is reflected in the State's smaller municipalities. Seventy of these less prominent communities likewise are served by streets of TEXACO.

The TEXACO Asphalt paving in cities of Ohio has been laid on various types of foundations. Of particular interest, however, is the great yardage of this paving which has been laid economically and successfully on worn brick streets.

Section of Fifth Avenue, Youngstown, Ohio, paved with TEXACO asphalt

Section of Superior Avenue, Dayton, Ohio, paved with TEXACO Sheet Asphalt

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Richmond
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Jacksonville

The Texas Company
ASPHALT SALES DEPT.
17 Battery Place, New York City

Chicago
Cleveland
Kansas City
Houston
Dallas
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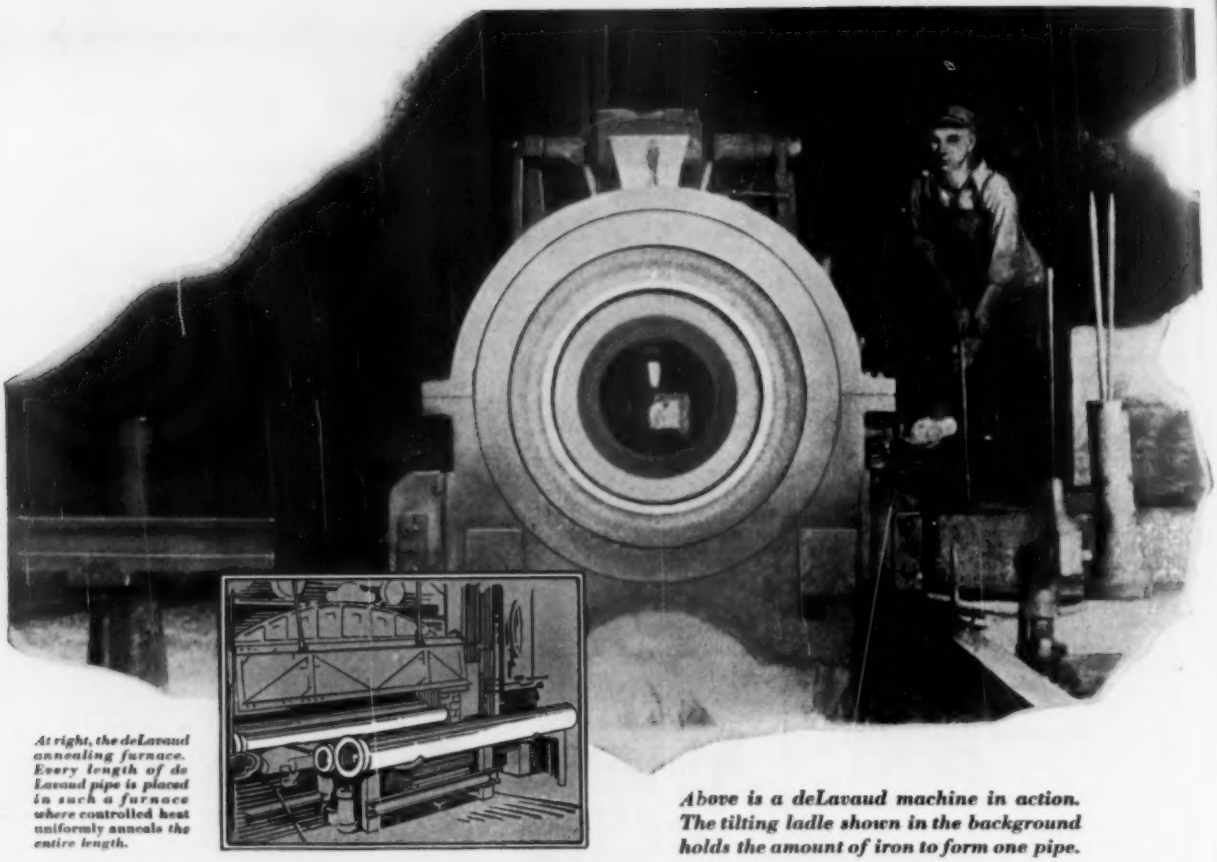
In THE MUNICIPAL INDEX (an 800-page annual volume) readers will find much material, including articles, lists and bibliographies on a wide variety of municipal and civic subjects, not published in the monthly issues of THE AMERICAN CITY.

For Index to Advertisements see page preceding back cover.



At right, the deLavaud annealing furnace. Every length of deLavaud pipe is placed in such a furnace where controlled heat uniformly anneals the entire length.

Above is a deLavaud machine in action. The tilting ladle shown in the background holds the amount of iron to form one pipe.

Sturdy, Flexible deLavaud pipe is always uniform in thickness

No chance of deLavaud pipe being "sided." A physical law assures the uniform thickness of the pipe walls. deLavaud pipe is made by pouring molten iron into a rapidly revolving cylindrical metal mold. The revolving action holds the iron against the mold with a force which at all points is equal to 40 times the force of gravity.

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"HINTSAND POINTERS" PAGE for MAYORS AND CITY MANAGERS

The Two Days of Play in the Five-Day Week

THE five-day week is no longer a fancy. It is a fact for half a million American wage-earners. True, it is largely an eastern phenomenon, according to the National Conference Board, which has carefully studied this significant recent trend, but it is here to stay. The Saturday half-holiday was the beginning. Employers are now coming to the conclusion that the other half does not pay them and that the two-day holiday has a good effect on morale. Inquiries by the U. S. Bureau of Labor Statistics indicate that 70 per cent of such factories have secured a greater hourly production since making this change. But greater leisure means greater demand on public recreational facilities. Neighborhood play spaces will still be important, particularly for children, but the two days off will require an increasing emphasis on larger play areas, more remote, for grown-ups.

Five Blocks of Buildings Moved to Widen Street

ONE of the most interesting street-widening projects to come to our attention is that of Main Street, Toledo, now nearing completion. The buildings lining this street for five blocks are being moved back fifteen feet. It is costing well over $300,000 to place the buildings on the new line. The city obtained deeds to the land to be taken in the widening and made a blanket contract for moving the buildings back. The owner's contribution is the land which he donates. The city waives its right to assess for the cost of moving the buildings. Incidentally this plan emphasizes in about as vivid a fashion as we could imagine the principle that a widening is equivalent to taking the least valuable portion of the lot (which is the rear) rather than the most valuable (the front).

City planning activities in Toledo have been notably aided by the City and County Planning Committee of the Toledo Chamber of Commerce, in cooperation with public officials and the newspapers. An account of the past year's work of the committee is given by J. Otis Garber, Secretary of the Chamber's Bureau of Public Affairs, at page 105.

Preparedness for Summer Swimming

SAFETY is sometimes synonymous with anticipation. For example, the summer season will soon be upon us, with its certain toll of drownings. One good way of meeting this problem is to conduct spring classes in swimming, life-saving and aquatic sports. A city with an adequate system of school swimming pools might well arrange to have them open every week night for those who will enroll for instruction classes, besides increasing the emphasis upon this phase of the school physical training curriculum. Buffalo, with twelve such pools, has a record of eighteen years of solid achievement in this work. In a single year 10,000 pupils were registered for courses, over a fourth of whom became proficient swimmers.

Professor Vollmer Surveys the Minneapolis Police Force

AUGUST VOLLMER has just completed a report for the Minneapolis City Council similar to the one prepared last year for Kansas City. This report follows much the same plan of investigation and presentation worked out by Chief Vollmer in that and similar studies. He recommends complete motorization except for the Loop district. This and traffic lights would permit the force to be cut from 550 to 475. The mental standing place of the Minneapolis police is high among the cities whose forces have been given the Army Alpha test.

If Your City Lacks a Planning Commission,

why not take early steps to join the growing group of forward-looking municipalities listed on pages 99 and 100 of this issue?

Should Public Property Be Insured?

THE matter of insuring public property is not of uniform urgency. Our largest cities can and do ignore this problem with impunity. The officers of a small city, on the other hand, are guilty of serious dereliction of duty if they fail to insure their principal public edifices. The New York State Bureau of Municipal Information has just made a careful canvass of this subject and concludes that cities of over 200,000 population may safely omit insurance. Their more valuable buildings are usually fireproof and the rest are scattered. They can be their own insurers. Perhaps as a fiscal arrangement an insurance fund would be desirable for them; but to insure with private companies would cost more than it would be likely to be worth. Cities between 50,000 and 200,000 are apt to require an insurance fund for their general property, but an unusually large public structure or one of special hazard should in most instances be privately insured. The small city has very little alternative to private insurance. The Bureau emphasizes the fact that it is almost impossible to generalize satisfactorily in this matter. Each city must work out its own solution. But the officials of any city are not living up to the trust reposed in them if they fail to give the matter careful consideration.

The City Manager Plan Through British Eyes

IT is interesting to note the views of a leading British administrator on our city manager system. Commenting on the significant spread of this system in the United States and now in Ireland, I. G. Gibbon, in a recent address before a regional group of the British Institute of Public Administration, endorsed its essential idea. In the British system, as he sees it, the committees tend to absorb themselves too much in details that might better be left to the expert. There is also a lack of coordination and integration of administrative work. He is certain that if the whole machine is to work to a common purpose, there must be a definite general control. The manager plan would, he believes, jar too much with present British traditions, but it will be necessary to find some equally effective method of welding the work of all communities and departments to a common purpose and policy.

A Comment on the Hopkins Ouster in Cleveland

To the Editor of THE AMERICAN CITY:

The Cleveland episode washed out according to the theory of the city manager plan and nothing happened there that had not happened before many times in other cities. Mr. Hopkins was told many times that he was out of step with other city managers in his conception of his functions, and the sound theory of the plan got him in the end. He was a good man and did a lot of good things, but he was a frank irregular as a city manager. This conspicuous experience will confirm the convictions already held and often avowed by other city managers as to their plan in the structure of municipal government.

RICHARDS S. CHILDS,
President, National Municipal League.

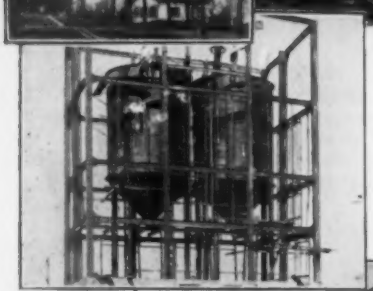
Two More City Managers Displaced

CLOSE on the heels of the Hopkins ouster in Cleveland, came news of similar displacements of existing managers in Stevens Point, Wis., and Sacramento, Calif. All of these cases are family fights in which an outside opinion would be as unwise as it would be unwelcome. We offer none. We have heard, however, that the men chosen to displace the former incumbents are men of high character and proved ability. Perhaps it is significant that when a city council does take the bit in its teeth and upsets a sitting manager, it is careful to replace him with a man whose qualifications command local respect.

And now ~ a plant in Birmingham *to serve the South*

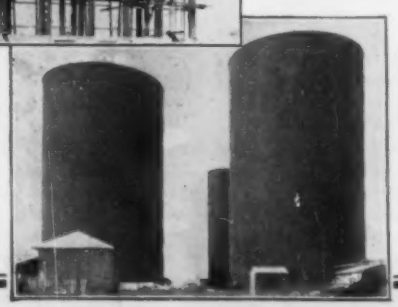
Right: *Riveted-up Tank.*

Below: *Elevated tank at Fayetteville, N. C.*



Above: *Hortonsphere storing gas at West Palm Beach, Fla.*

Left: *Lime storage bins at Miami, Fla., water softening plant.*



Right: *Three standpipes storing water in Dallas, Texas, waterworks system.*

The recent purchase of The Reeves Brothers Company plant in Birmingham, Alabama, which we are now operating in conjunction with our other plants at Chicago, Greenville, Pa., and Bridgeburg, Ont., increases our production facilities and enables us to serve the South from a convenient location. It also makes possible quicker delivery by water to the Pacific Coast.

With this new plant we can give Southern municipalities improved service in the fabrication of *Elevated tanks, Storage tanks, Standpipes, Cylindrical tanks, Hortonspheres, Smokestacks* and other *steel plate work*. We have had, for some time, a well organized Southern Erection department, with experienced crews working throughout the Southern States.

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Philadelphia	1616 Jefferson Bldg.
Boston	1501 Consolidated Gas Bldg.

HORTON TANKS

ITEMS and ABSTRACTS on WATER SUPPLY AND PURIFICATION

Water Softening for Small Municipalities

THE term "small municipality" is interpreted as meaning a community having a population of less than 10,000. In the state of Ohio, 322 out of 377 incorporated communities having municipal water-supplies are in this class. The majority of these small cities and villages have well-water supplies, many of which are hard and contain large amounts of iron. For the most part, the water is palatable and of good sanitary quality.

It is a popular notion that the softening of water renders its taste less pleasing. This, however, is not the case when softening is followed by recarbonation.

Water having a hardness of approximately 90 p.p.m. seems to be acceptable to most people in this section of the country. A hardness of 70 to 80 p.p.m. should be aimed at. This is about 40 to 50 p.p.m. less than the average hardness of Lake Erie, and 20 to 30 p.p.m. less than the average of the Ohio River.

The difficulties of designing a water-softening plant for a small municipality are:

1. Only limited technical supervision is available.
2. It is often advisable to design a plant which need be operated but 8 to 10 hours a day.
3. Many a surface supply should be abandoned in favor of a well supply of harder water, because of lack of full-time chemical control.
4. For the construction of a small plant the cost per capita is greater and costs must be kept at a minimum.
5. The engineering fee is so small that the small municipality is apt to get mediocre engineering service.

The type of plant that should be built will also largely depend upon the above factors. There are three general types of plant which should be considered:

1. Lime-soda continuous process
2. Lime-soda intermittent process
3. Zeolite

Water softening is now being considered at many private and municipally owned plants for several reasons:

1. The desire to produce a better product for the consumer
2. A means for justifying an increase in water-rates
3. As an opportunity for increasing the water storage capacity of the works where a well supply is depended upon

Since the development of carbonation, the great objections to water softening have been overcome. Carbonation has also made it possible to distribute softened well water without filtration. Zeolites have recently been developed which are far more efficient than the original zeolites. It is now practicable to remove temporary hardness by the use of lime followed by carbonation and then to employ zeolites to remove the permanent hardness.

—Abstract from a paper by C. P. Hoover, Supt. of Water, Columbus, Ohio, read before the Eighth Annual Ohio Conference on Water Purification.

Reservoir Regulations at Newburgh, N. Y.

NEWBURGH, N. Y., permits fishing in its water storage reservoir under certain rules and restrictions recently adopted by its Common Council. A permit must first be secured from the superintendent of the reservoir, for which a charge of $1 a day is made. This includes the use of a boat. Shore fishing is prohibited. Each fishing permit will cover not more than four persons to one boat. No fishing is permitted on Sundays, and on holidays permits are issued for a half-day only. The hours for fishing are from sunrise to sunset. The number of fish which may be taken by the occupants of any boat in any one day is limited to ten for one person or fifteen for each boat for bass; for pickerel, fifteen for each person, or twenty-five to each boat in one day. All other fish not to exceed thirty to a boat in any one day.

Special precautions are taken to insure sanitary protection of the water-supply and the preservation of the purity of the water. All laws of the New York State Health Department must be observed. No bait-cans, lunch-boxes, garbage and other refuse may be left in the boat or thrown in the reservoir. Such material must be deposited in receptacles provided for that purpose. No dead animals or fish, manure, garbage, compost, vegetable or other putrescible matter may be deposited in any spring, marsh, or watercourse, or in the reservoir or on the ground within 50 feet thereof. No clothes or unclean objects may be washed in the reservoir or its nearby contributing water. Bathing and swimming are prohibited.

CHARLES B. GILCHRIST,
Superintendent of Water-Works.

Adequate Aqueducts

A GOOD water-works system is the town's most fundamental utility. Quite as much attention must be given to its organization and operation as to any other public or corporate industry. The development of the community must be studied and the plans of the system so laid that any unexpected increase in population can be handled with minimum expense to the water department. In other words, the nucleus must be flexible.

Many private utilities and large municipalities possess special departments whose sole function is to interpret past growth into future demand. Power generating stations are constructed to meet this future demand, and they are so designed as to be readily enlarged if the demand exceeds that forecasted. Telephone exchanges are located with an eye to the future, and railroads follow the trend of future development. Water systems, unfortunately, are often built for the present with a factor of safety to care for the future. How much easier it is to install a new electrical transmission line, a new telephone cable or an extension to the street railway than to replace old pipe lines whose capacity has become inadequate.

We have, at many times, discussed the permanence of cast iron pipe, how it outlives the men who installed it. But we have not spoken of the permanence of the system of which cast iron pipe is but one of the items. The system is permanent only so long as it is adequate. Therefore, the way to obtain a permanent system is to design a system which contemplates heavy future demands. In other words, the nucleus should be so designed as to permit normal expansion in any direction without extensive renovation.

A flexible nucleus does not mean a system composed of pipe of great diameter. It comprises a system designed so as to supply a large increase of water by the addition of one or more arteries or trunk lines to strategic points. By such an addition, a water-main, hitherto an artery, may be made to act as a distribution feeder and receive its supply from the new trunk line. The advantages of this design are obvious: to enlarge the supply it is only necessary to add to the present installed equipment. Nothing need be removed or replaced and therefore an extremely expensive, tedious and inconvenient operation is avoided.

From *The U. S. Piper.*

Gravity Water-Supply in Franklin, Tenn.

WITH a population of 4,000, Franklin, Tenn., brings its water-supply by gravity from wells 12 miles from the center of the city. The water is stored in a reservoir and an elevated steel tank, the supply being chlorinated. In the distribution system there are 22 miles of cast iron mains from 2 to 10 inches in diameter. Cast and galvanized iron are used for services. The average consumption is 150,000 gallons per day, or 31 gallons per capita. Of the 770 domestic services, 660, or approximately 92 per cent, are metered, the industrial supply being fully metered. The domestic rate is $1 for any amount up to the first 2,000 gallons, and 30 cents per 1,000 gallons thereafter.

PARK MARSHALL,
Mayor.

SPRINGTIME is FLOOD TIME

High Waters of the Mississippi River in Louisiana

Continuous Chlorination

Will Safeguard Your Water Supply

Every Spring "old man river" starts his annual rampage—dealing death and destruction to the unprepared. With the first thaws of Spring comes his warning! . . . Will you be ready?

Will you be ready to overcome the gross pollution that the flood will bring to your water supply?

Will you be ready with W. & T. apparatus and Liquid Chlorine to destroy the microbes of disease and eliminate the danger of water-borne epidemics?

W. & T. are ready now! . . . Why wait for the flood.

"The Only Safe Water is a Sterilized Water"

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W. O. DRAKE
Supt., Water Dept.
Corning, N. Y.
(Appointed 1912)

JOHN W. CANNON
Supt., Water Works
Fort Lauderdale, Fla.
(Appointed 1925)

ROBERT J. CAMPBELL
Supt., Water Dept.
Menominee, Mich.
(Appointed 1918)

G. WEBBER KNIGHT
Mgr., Natrona Water Co.,
Natrona, Pa.
(Appointed 1925)

WHO'S WHO IN WATER SUPPLY

The 27th of a Series of Portraits of Water-Works Officials, Which Has Appeared Monthly Since January, 1928

WILLIAM P. MOLIS
Supt., Water Works
Muscatine, Iowa
(Appointed 1875)

W. J. LAPWORTH
Supt., Water Dept.
Pittsburg, Kans.
(Appointed 1911)

MAURICE L. JONES
Supt., Water Dept.
Benton Harbor, Mich.
(Appointed 1929)

JOHN W. ADAWAY
Supt., Water Dept.
Girard, Ohio
(Appointed 1922)

D. E. BICKNELL
Engr., Public Works
St. Joseph, Mich.
(Appointed 1927)

T. E. NICHOLS
Supt. of Utilities
Atlantic, Iowa
(Appointed 1906)

ROY E. SUTTON
Supt., Water Works
Abilene, Kans.
(Appointed 1922)

MARCUS M. HALL
Supt., Water Dept.
Arcadia, Fla.
(Appointed 1920)

KENNETH MacLAY
Supt., Water Dept.
Sault Ste. Marie, Mich.
(Appointed 1912)

Wanted—

more streets

built—

—with

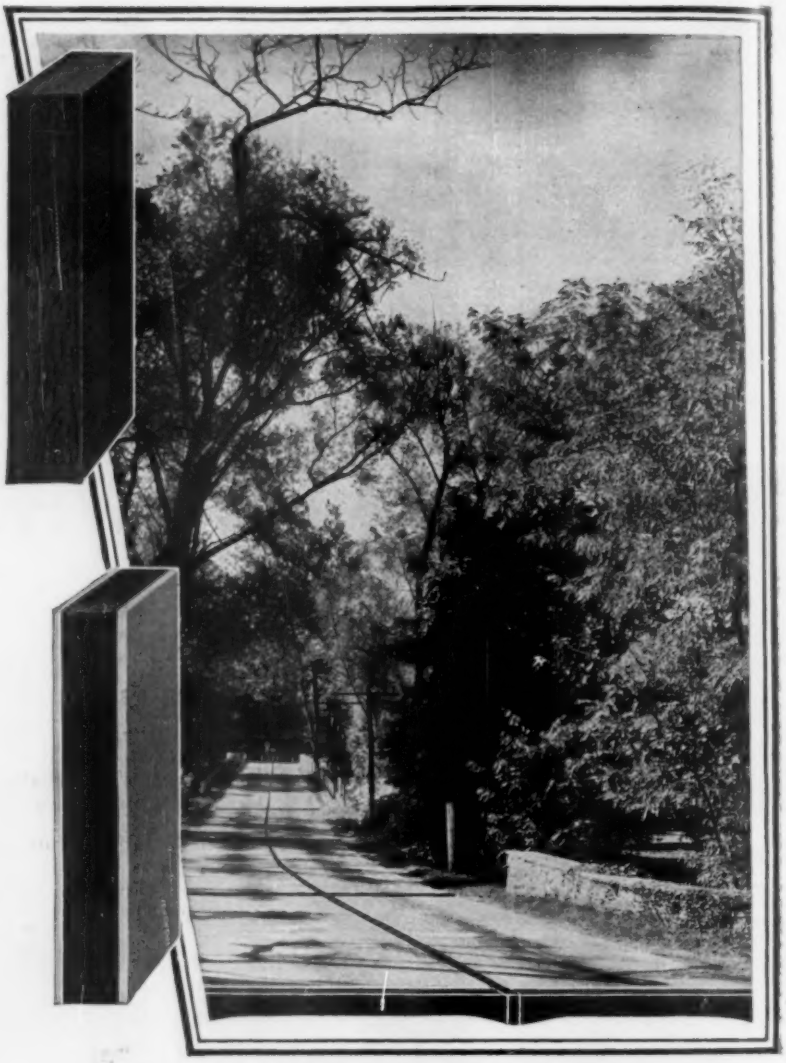
VISION!

One of the greatest authorities in this country on concrete highway engineering says:

"—And I would put expansion joints every 35 feet, with some kind of expansion joint filler that would really take care of temperature and moisture variations."

Failures are *built into* roads and streets when no provision is made for "really taking care of temperature and moisture variations."

And, without intent, the quotation describes to the letter the performance of Servicised Expansion Joint.



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SERVICISED APPROVED PRODUCTS

Expansion Joints for Roads, Streets, Sidewalks, Buildings
Fibrated Asphalt Plank for Bridges, Runways, Platforms
Highway Crossing
Rail Filler and Track Insulation
Sewer Pipe Jointing
Industrial Flooring
Waterproofing

Other Fibrated Bituminous Construction Materials

What Are Servicised Expansion Joints?

They are premoulded safety strips which protect concrete structures against the destructive results of stresses set up by natural causes.

They are produced from specially refined asphalts to which fibers are added for elasticity and reinforcement, then formed hot under pressure into the required shapes.

They do not deteriorate in stock or on the job and can be handled as easily as a board.

By protecting municipal structures of the rigid type against cracks and bursts due to rapid expansion and contraction, the money is saved for more municipal construction.

Begin now by getting Catalog 11 *and estimates for that job in hand.*

SERVICISED PAT. OFF. © 1918 REG. U.S.

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During March we hope you will remember to mention THE AMERICAN CITY.

ITEMS and ABSTRACTS for ENGINEERING AND HIGHWAY DEPARTMENTS

City Provides Dustless Parking Space

TWO weeks prior to the East and West football game that was held in the Rose Bowl, Pasadena, immediately after the famous Rose Pageant on New Year's Day the Department of Streets began a series of dust-laying treatments throughout the parking area about the stadium, which is located in a dry section of the Arroyo Seco. Under the direction of the Saline Products Co., liquid calcium saline, a product obtained from Death Valley, was applied by means of compressed-air sprays to approximately 1,250,000 square feet of parking space. This chloride is fireproof and non-injurious to tires, shoes or clothing, and it is expected that it will continue to be a dependable dust preventive for several years, thereby not only checking the clouds of dust which formerly rose over the parking area, but also adding immeasurably to the comfort and safety of the people who frequently congregate in this great amphitheater.

As the seating capacity of the stadium is about 81,000, and at a conservative estimate 30,000 cars were to be cared for, every effort was made to prevent all possible traffic tie-ups, and in furtherance of this efficiency program a 42-inch magnet weighing about a ton was rented from the Los Angeles shipyards at San Pedro for $100, and quantities of nails and pieces of metal were drawn from the earth in all stadium parking spaces.

The magnet, capable of picking up half its own weight of iron, was mounted on a truck crane and both charged and manipulated from the truck. The boom made it possible to clear a 20-foot space on either side of the truck on which it was mounted. Spikes, nails and pieces of metal were pulled from the ground to a depth of 1½ inches. When a sufficient amount had accumulated on the magnet, the power was shut off and the scrap dropped in a small pile on the ground. A workman followed with a wheelbarrow, gathering up these piles, and the accumulation thus secured was sold for scrap-iron.

W. E. GOUGER,
Superintendent of Public Buildings.

SWEEPING PART OF THE PARKING AREA AT THE ROSE BOWL, PASADENA, CALIF., TO PREVENT PUNCTURES WITH ATTENDANT TRAFFIC TIE-UP

Types of Bridges in San Francisco

THE city and county of San Francisco maintains and operates, or has under construction, a number of bridges, the more important of which are tabulated below:

Location	Type
Third Street at Channel	2-leaf page bascule
Fourth Street at Channel	Strauss bascule
Sixth Street at Channel	Draw, pivot swing
Third Street at Islais Creek	Strauss bascule
Health Street at Harrison Street	Steel girder
Mission Street at Alemany Boulevard	Concrete
San Jose Avenue at Mt. Vernon Avenue	Concrete
Evans Avenue at Army Street	Timber
Highland Avenue at Bernal Cut	Concrete
Richland Avenue at Bernal Cut	Concrete
Bosworth Street at Bernal Cut	Concrete

* Under construction.

Length and Width, Feet	Service	Year Built	Approx. Cost
113 x 51	Vehicular & St. Ry.	1904	$110,000
94 x 61	Vehicular	1917	112,300
2 openings, 58 x 20	Vehicular	1888	27,000
105 x 46	Vehicular Stm. & El. Ry.	1915	213,700
82½x 35	Vehicular & St. Ry.	1913	34,500
908 x 82½	Vehicular & St. Ry.	1912	210,600
697 x107	Vehicular & St. Ry.	1926	103,600
103 x 36	Vehicular	1926	5,300
206 x 40	Vehicular	*1929	30,330
235 x 40	Vehicular	*1929	47,655
108½x121	Vehicular Stm. & El. Ry.	*1929	174,744

The operating personnel of the movable bridges is under the Superintendent of Public Buildings, who is responsible also for ordinary maintenance, such as painting, running repair of machinery, etc. Major repair is done by contract, the plans, specifications and inspection being made by the Bureau of Engineering, Department of Public Works. Occasional damage is done to the movable bridges by improper handling of ships or by other accident. In such cases the Bureau of Engineering appraises the damages and formulates plans for repair.

Calcium Chloride Used on Ann Arbor Streets

THE city of Ann Arbor has used calcium chloride quite extensively for the past eight or ten years. Previous to this, oil was used, but because of the criticism of property owners and the pitting of streets, the Street Committee recommended the use of calcium chloride. For several years it was applied only to districts petitioning it, and each property owner had to pay his share. This method was very unsatisfactory, as there were always a few property owners who would not pay, and the amount had to be made up by the rest of the residents before the calcium chloride could be applied.

In 1927, the Council ordered all dirt streets in the city limits, approximately 60 to 65 miles, to be treated with calcium chloride, and 900 tons were applied at a cost of $28 per ton f.o.b. Ann Arbor. The cost of applying was $765.70.

During 1928, 750 tons were used at a cost of $24.52 per ton, the cost of application being $666.65. During 1929, 600 tons were applied, the cost per ton being the same as during 1928, and the cost of application $648.95.

The experience in Ann Arbor has been that after using calcium chloride for a year or two, the streets become more or less saturated, and in following seasons do not require quite so much material.

The first application is put on about May 1, a second on July 1, and a third the latter part of August. The first application is about 1½ pounds per square yard, the second 1 pound per square yard, and the third ½- to ¾-pound per square yard.

A. J. PAUL,
Street Commissioner.

Oil Used for Maintenance in Wabash, Ind.

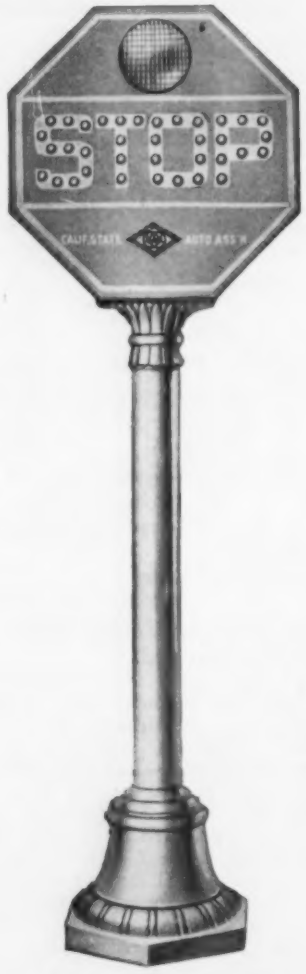
WHEN a macadam street in Wabash, Ind., becomes very dusty, the chuckholes are patched with crushed stone which has been treated with cut-back oil, and then the loose material from the side of the road is graded into the middle of the street. This is followed by an application of Standard No. 4 crude oil which is heated to about 200 degrees Fahrenheit and applied by gravity with a distributor wagon. After the oil is used, the road is lightly sanded to keep the traffic from picking up and carrying away any excess oil which may collect in low spots.

The oil costs 4¼ cents per gallon f.o.b. Whiting, Ind., plus about 1 cent per gallon for freight. During the past year the property owners were asked to pay for the oil, the city applying it free of charge. This was found unsatisfactory, as some of the residents wanted oil used and their neighbors refused to pay for it, so it was decided to consider oiling as a maintenance proposition rather than one of dust prevention. Preference has been given to the streets where requests have formerly been made for oil and it has been paid for. This has proved satisfactory. Three applications of oil are generally made.

While the city uses a No. 4 oil, the county, which has recently started oiling its unpaved roads, uses a No. 3, which penetrates more than the No. 4. It has been found, however, that the heavier oil mats in three or four applications, giving a fairly hard-surfaced street.

JOHN L. BEAR,
City Engineer and Street Commissioner.

Why Did San Francisco *Adopt* W & T *Dry Battery Operated Stop Street* FLASHERS?



W & T Dry Battery Operated Stop Street Flasher Adopted by San Francisco

Because—actual field tests by city traffic experts showed that 98% of drivers come to a FULL STOP at arterial streets protected by W&T stop flashers.

Because—the 60 brilliant flashes per minute of the W&T flashers proved to be more effective than unilluminated stop signs during the day—with marked superiority during twilight and darkness.

Because—comparative costs both as to initial investment and maintenance show greater economy using W&T dry battery flashers over any other type flasher.

Because—of the known quality of W & T products and the reliability of W&T service—established over 16 years in making more than 10,000 installations in cities and towns in North America.

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ALSO SEE OUR ADVERTISEMENT ON PAGE 8

WHO'S WHO IN CITY & COUNTY ENGINEERING

One of a Series of Portraits of Engineering Officials, Which Has Appeared Monthly Since April, 1928

PETER T. MITCHELL
City Engineer
Petoskey, Mich.
(Appointed 1925)

RALPH E. ROOP
County Engr., Adams Co.,
Decatur, Ind.
(Appointed 1928)

THOMAS J. DALEY
City Engineer
Camden, N. J.
(Appointed 1923)

HARRY C. C. SHUTE
Borough Engr., Clayton and
Glassboro, N. J.
(Appointed 1898)

CARL J. HEIM
County Surveyor, Dubois Co.,
Jasper, Ind.
(Appointed 1929)

J. DONALD SULLIVAN
City Engineer
Alma, Mich.
(Appointed 1928)

I. J. CASEY, JR.
Town Engineer
Irvington, N. J
(Appointed 1909)

B. W. HARVEY
City Engineer
Mt. Clemens, Mich.
(Appointed 1925)

HARRY H. MORTORFF
County Engr., Noble Co.,
Albion, Ind.
(Appointed 1928)

JOHN E. ANDERSON
County Engr., Posey Co.
Mt. Vernon, Ind.
(Appointed 1924)

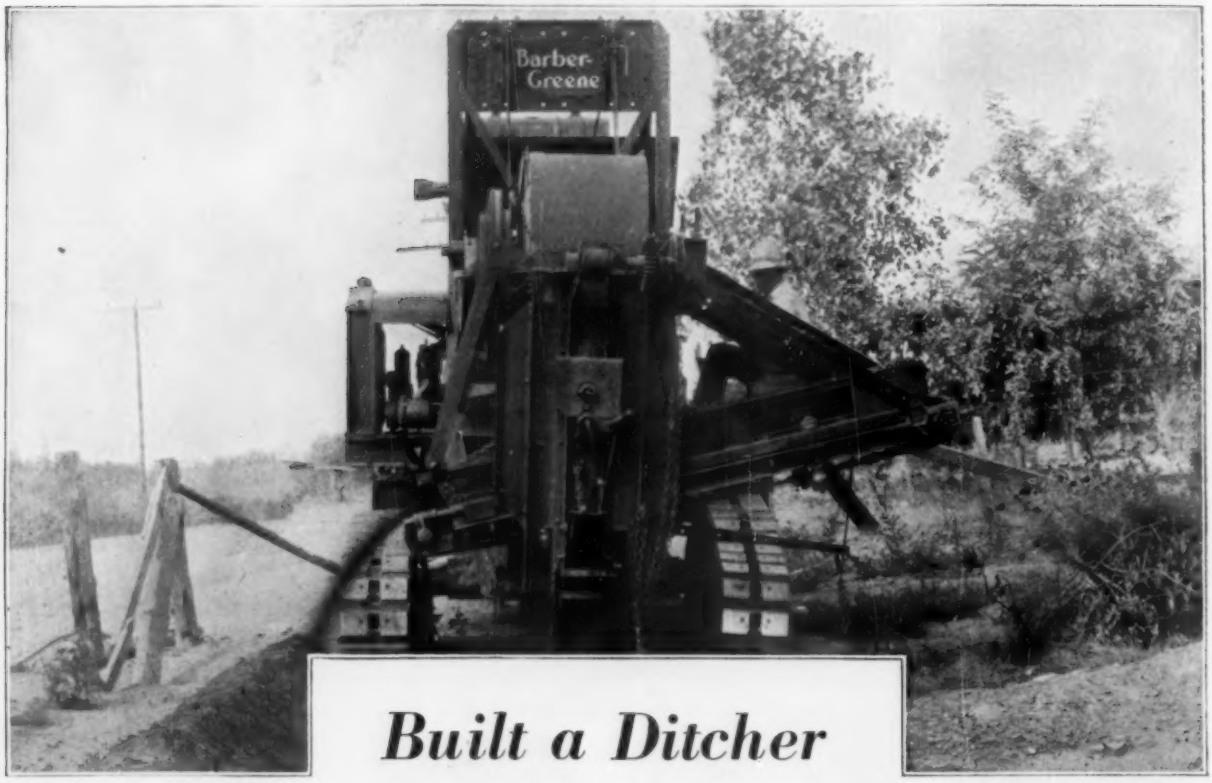
DONALD W. LESSIG
City Engineer
Warsaw, Ind.
(Appointed 1925)

NELSON I. RAYMOND
City Engineer
Owosso, Mich.
(Appointed 1919)

RALPH COCHRAN
County Surveyor, Shelby Co.,
Shelbyville, Ind.
(Appointed 1929)

DAN H. VINCENT
City Engineer
Big Rapids, Mich.
(Appointed 1917)

"Those Crazy Fellows" Out in Aurora, Illinois



Built a Ditcher

Five years ago, this man Barber and his cohorts, out in Aurora, Ill., built a strange new digging machine with a vertical digging boom and other strange, unheard-of "gadgets."

The machine weighed and cost about one-third as much as the colossal collections of whirling machinery, known as ditchers in those days.

"Those fellows are crazy to even try to build a ditcher like that," said the wise ones—just as they called Fulton crazy when he built his steamboat.

But the strange digging machine ran away from the ungainly "big-boys" on the straightaway. And it replaced picks and shovels on laterals and short-runs.

Daily digging footages went soaring. Costs per foot dropped straight down.

Those crazy fellows out in Aurora, Ill., are still putting "crazy notions" into digging machines. From the original vertical boom ditcher that set the industry upside down, Mr. Barber and his engineers have developed a complete ditcher line.

These machines continue to do strange things.

We hear of them going through macadam and coral rock. We hear of them romping through caliche and clay.

We watch them pick their way carefully through a maze of underground pipe and conduit — never harming a one.

Yet we see them chop their way through roots and rocky ground.

We constantly get tales of how they dodge in and out of close quarters —of how their vertical booms leave no ramps—of how closely they hold to line and grade—of the low costs they establish.

So we've prepared a book to give you an idea of what these strange machines, built by "those crazy fellows" out in Aurora, Ill., do to ditching and ditching costs. The title of the book is: "Ditching Snapshots and Records." A post card brings your copy to you.

BARBER-GREENE COMPANY · 515 W. Park Avenue, Aurora, Illinois

BARBER B STANDARDIZED MATERIAL HANDLING MACHINES G **GREENE**

ITEMS and ABSTRACTS for PARK AND PLAYGROUND DEPARTMENTS

A Fine District Park Without Financial Outlay

THE Berkeley, Calif., Chamber of Commerce has recently seen an opportunity for establishing in the hill area of the East Bay District what it believes to be one of the finest regional park systems of the country. It is an opportunity realizable only provided the necessary machinery be set in motion for appropriating to park use land already publicly owned, before it is sold for private development.

The land belongs to the Metropolitan Utility District, which took over from the East Bay Water Co. approximately 40,000 acres, 5,000 to 10,000 acres of which are regarded as highly desirable for park purposes. Since no bond issue or other outlay of funds is necessary, and since there is a generally acknowledged shortage of recreation areas in the cities of the East Bay district, it is believed that strong public sentiment will be easily created for the park plan. The Chamber of Commerce has learned that the Utility District directors would look with favor upon action of the Legislature empowering them to engage in park administration as well as water-supply administration. A Women's Advisory Committee of the Chamber of Commerce has organized a speakers' bureau to carry the story of the proposed parks to the entire metropolitan area.

Municipal Play Provisions in Kansas

STATISTICS issued by the League of Kansas Municipalities show that in 1929 there were 5,568 acres of park land owned by the 576 incorporated cities of the state. Of this amount, cities of the first class (of which there are 11) owned 2,454 acres; cities of the second class (of which there are 77) owned 1,774; and cities of the third class (of which there are 488) owned 1,340 acres.

There were shown to be 144 municipal bands; 228 municipal tourist camps; 93 municipal swimming pools; 60 municipal playgrounds; and 60 municipal auditoriums. It is interesting to note that 85 of the total number of public bands are reported from cities of the third class; as are 201 of the tourist camps, 40 of the swimming pools, 26 of the playgrounds, and 29 of the public auditoriums.

The 5,568 acres of municipal park land have increased from 5,295 in 1927, and from 4,341 in 1925. The 144 public bands have decreased from 148 in 1927, and from 160 in 1925. Swimming pools have increased from 67 in 1927 to 93, and public auditoriums have increased from 44 to 60.

Our Gladiatorial Age

"SPECTATORITIS" has become almost synonymous with Americanism. We are in the gladiatorial stage of Rome, with a few participants and many seats for spectators. . . . Our cities have produced thousands of robots who are mere creatures of their environment. To keep growing, new problems must be solved. New activities must be sought upon the participation basis, not the spectator basis. The problem of adult recreation is the problem of supplying these activities. . . . It will take infinitely more planning than has yet been displayed by any city in the country to provide man with the activities which will make his leisure time an asset rather than a liability.

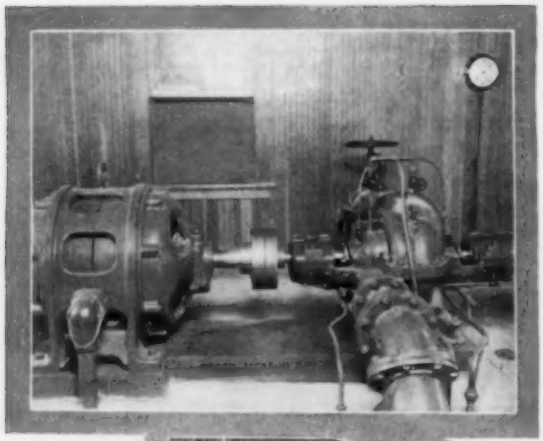
JAY B. NASH,
Professor of Physical Education, New York University.

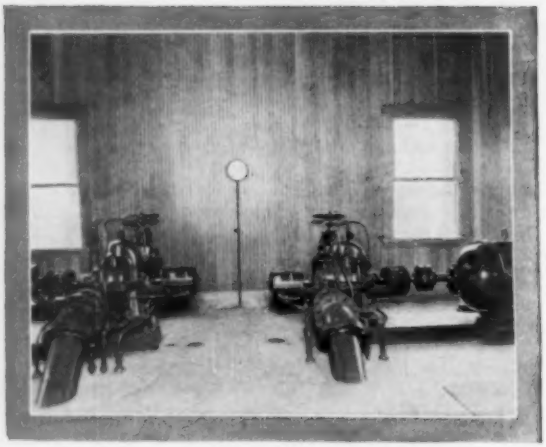
This Page

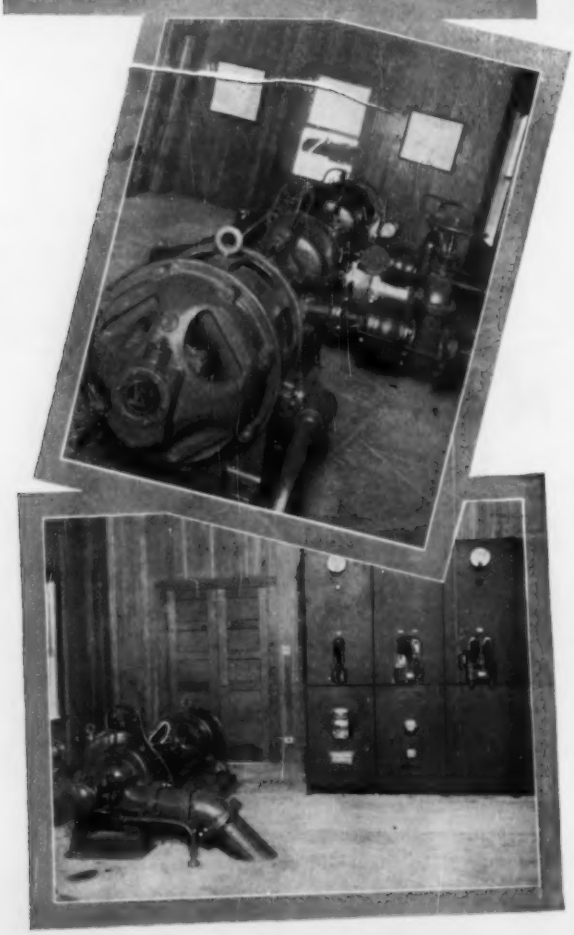
in the April issue will contain opposing expressions of prominent national figures in the playground movement on the moot question recently discussed here by city managers and others: *Who Should Have the Administration of Municipal Recreation?*

JUNGLEGYM
All children like to climb like monkeys.
That explains Junglegym's tremendous popularity.
And why it is the most popular piece of playground equipment.
It draws children like a powerful magnet. Fun—exercise—genuine thrills without danger.
You owe it to the children to investigate Junglegym.
May we send you our catalog?
Patented March 24, 1925
PLAYGROUND EQUIPMENT CO.
68 Duane St., New York

HIGH PRESSURE PUMPING







Wherever continuous operation is imperative Byron Jackson pumps are always preferred. That is why these pumps are found serving scores of cities, big irrigation projects and construction jobs. The illustrations here shown are of the Mountain Springs Station of the San Jose Calif. Water Works where a series of two-stage, horizontal, multiplex pumps operate twenty-four hours a day.

SINCE 1872

BYRON JACKSON PUMP CO.

FACTORIES:
Berkeley, Los Angeles, Visalia, Calif.
Branches: NEW YORK and CHICAGO
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BYRON JACKSON

CENTRIFUGAL PUMPS FOR EVERY SERVICE

ITEMS and ABSTRACTS on REFUSE COLLECTION AND DISPOSAL

Garbage Fed to Hogs in Phoenix

PHOENIX, ARIZ., with its population of 60,000 and 6.18 square miles of area, requires that garbage be separated from all other refuse. The city makes collections two or three times a week in the residence district and daily in the business sections, 98 per cent of the cans being placed in the back yards and collected from alleys. Four 6½-yard trucks, one 1½-yard truck and one 7-yard trailer are used, with a crew of 16 men all year round.

During 1928 approximately 9,048 tons of garbage was collected in Phoenix at a total cost of $25,507.09. Of this amount, $21,314.52 was spent for payroll and $4,193.57 for maintenance and operation.

After collection the garbage is hauled 3½ miles to a private farm, the owner being given the garbage for feeding to his hogs in payment for permission to dump on his ground. Approximately 24 tons of garbage is handled daily in this manner.

IRA PIRTLE,
General Foreman, Street Department.

Three Separations of Refuse in Norfolk

IN Norfolk, Va., garbage is required to be separated from other refuse, and paper is also collected separately. In this 37-square-mile city of 184,000 population, the entire population is served by the collection and disposal system. Garbage cans are placed on the building line and collected almost entirely from the street.

During 1928, the total collections of refuse, ashes and miscellaneous material amounted to 155,173 cubic yards, at a cost of $98,001.28; 41,158 cubic yards of garbage at a cost of $37,966.25; 69,385 cubic yards of paper at a cost of $31,121.13; and 37,981 cubic yards of street sweepings at a cost of $29,018.90; giving a total of $196,107.56. The Street Cleaning Department, which handles the collection and disposal of all refuse, incinerated 22,044 cubic yards of garbage and 59,737 cubic yards of paper, and gave 17,880 cubic yards of garbage to the hog farm. The incinerating cost was $11,681.40, and the total salvage and sale of manure produced a revenue of $1,499.31. The average number of men employed daily was 174, exclusive of the superintendent and clerk.

The daily recapitulation sheets of December 17, 1929, indicates that mid-winter collection required 8 trucks, 2 motor pick-up sweepers, 1 motor flusher, 1 horse-drawn sweeper, 6 tractors, 28 carts, 7 wagons, 29 trailers and 62 horses. With this equipment, 121 cubic yards of sweepings were collected, as well as 462 cubic yards of refuse, 104 cubic yards of garbage and 282½ cubic yards of paper, employing 178 men; and 1,452,778 square yards of pavement were swept.

Quoting from the sheets for August 1, 1929, a midsummer's day's work required 13 trucks, 1 motor pick-up sweeper, 2 motor flushers, 1 horse-drawn sweeper, 6 tractors, 32 carts, 8 wagons, 30 trailers, and 74 horses, and employed 190 men. One hundred and eleven cubic yards of sweepings, 379½ cubic yards of refuse, 180 cubic yards of garbage and 213 cubic yards of paper were collected and 1,392,550 square yards of pavement were swept.

The total expense for 1928, including the salary of the superintendent and clerk, was $283,455.15.

W. G. MITCHELL,
Superintendent, Street Cleaning Department.

Berkeley Charges for Garbage Collection

IN Berkeley, Calif., which has a population of 85,000 and an area of 9 square miles, a charge is made by the city direct to the householder for the collection of garbage. This charge is based upon the size of the container and the number of calls per week. Collections are generally made once a week in the residential sections and daily in the business districts. Each load of garbage is weighed, the total for 1928 being 20,366 tons, requiring the employment of 35 men and the use of one 1-ton Ford truck, one 3-ton Mack truck, one 4-ton Sterling, and ten 2½-ton Garford trucks. With the exception of garbage fit for hog feed, all refuse is mixed for collection. A revenue of approximately $450 a month is derived from the sale of hog feed, and about $75 per month for paper. All refuse is hauled about 3 miles and disposed of by the fill and cover method on tide lands, about 50 tons being handled per day. During 1928, the collection costs totaled $85,277.38; the payroll, including accounting and billing, being $68,225.56; and maintenance and operating costs, $17,051.82. For disposal, the payroll was $4,209.81, while maintenance, repairs and other costs amounted to $3,633.01, making a total disposal cost of $7,842.82.

O. L. LARSON,
Office Manager, Bureau of Garbage Service.

Handling Garbage in Independence, Kans., at a Profit

FORMERLY, garbage in Independence, Kans., a city of 14,000 population, was hauled by "slop haulers," who fed some of it to hogs and dumped the remainder, especially the tin cans, by the roadside.

To remedy this situation, an ordinance was passed requiring garbage haulers to cover their wagons so that papers and trash would not be scattered along the highways, and also requiring that garbage be hauled in fly-tight containers. Some of the collectors tried to obey the ordinance, but the leaking of garbage and scattering of trash continued. Another ordinance was adopted permitting a contract for the collection of garbage in certain sections of the city. Five men were given contracts for different districts. Because each man had certain customers outside of his district who liked his service and paid well for it, and because the householders insisted upon having their old collectors back, this method was not satisfactory.

A contract for the whole town was tried, and two collectors took yearly contracts to get the hog feed. This did not work, because the hog feed was of greater importance than the service to the householder.

Another contract was entered into with a man who makes the collection of the garbage his chief business. He does feed hogs, but keeps them far enough away from town so that there are no complaints. This has proved quite satisfactory, and instead of dozens of complaints every day coming to the city office, many days elapse between complaints and about half of these are from people who are at fault themselves and who have not paid or have locked their cans on the back porch or have caused the failure in some other way. Where the fault is due to the collector, the error is corrected at once with prompt truck service.

The contractor pays $50 per month to the city for this exclusive contract. The city has a dump the keeper of which was formerly paid $2 per day. The garbage contractor now maintains this dump, and the sale of junk pays for a man to look after it.

Once a year the city has spent $400 on a spring clean-up, all cans, trash, etc., being hauled to the dump by city teams. It is believed that this may not be necessary this year. About 80 per cent of the householders are paying 50 cents to $1 per month for garbage collection. There are a few garbage bootleggers who steal the contents of good cans during the night, but they are gradually growing less and it is being proved that a city garbage collector under contract and bond will give better service to the householder. At least, the system is making Independence a cleaner and more sanitary city at a profit of about $100 a month.

C. H. KERR,
Mayor, Independence, Kans.

Tonawanda Decides Garbage Collection Is Not a Public Health Function

THE Common Council of the city of North Tonawanda, N. Y., has transferred the collection of garbage and refuse from the Health Department to the Department of Public Works.

Other municipalities might well profit by the example of North Tonawanda. Health departments should be relieved of all work which has no relation to the public health, but it seems difficult to overcome tradition.

We shall be glad to tell you how voting machines are actually paying for themselves out of savings.

This Man's Ballot once cast Cannot Be Thrown Out or Altered

These Voting Machine Features Assure It

IT is significant that many communities using voting machines for a quarter century have never had an election contest. In a compartment inside the machine, protected by a steel door, locked and sealed against manipulation, the results of each election are safely and permanently recorded.

To the tax payer this means material savings in the cost of election recounts. Not only does the voting machine, because of its mechanically accurate count, discourage election contests but it also permits a recanvass in a short time as compared with hours, days or even weeks when paper ballots are used.

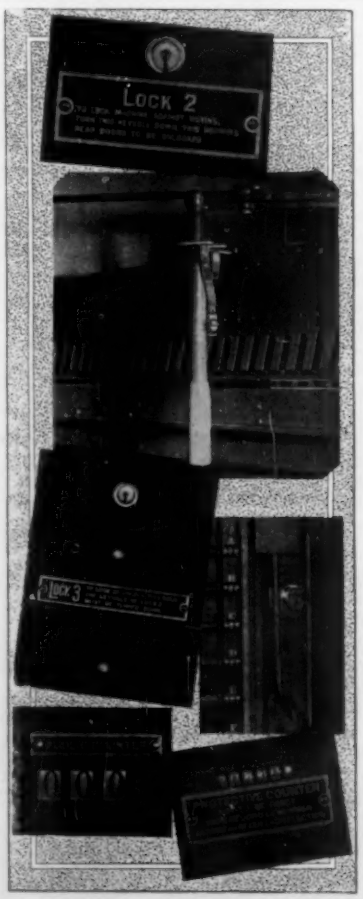
Lock No. 2 which prevents operation of the voting face of the machine after the polls have closed.

A metal seal fitted over the curtain lever, without the release of which no ballots can be cast.

Lock No. 3 on the back of the voting machine which precludes access to the counter compartment.

A Yale lock inside the counter compartment. Counters showing the vote for candidates cannot be altered unless it is unlocked. The key is permanently in the possession of the Board of Elections.

Public and protective counters, the latter built into the machine and inaccessible. Both of these counters would disclose any operation of the machine after the results of the election had been recorded



Automatic VOTING MACHINE CORPORATION
JAMESTOWN ~ NEW YORK

"KEEP YOUR STREETS CLEAN"

ITEMS ON STREET CLEANING AND SNOW REMOVAL

Snow Removal in the Business Section of New Britain, Conn.

SNOW removal in the business areas of the city of New Britain, as in practically all the principal cities of New England, is hampered by traffic congestion. Street cars, busses, commercial vehicles unloading merchandise, parked pleasure cars, and streets too narrow for modern traffic, are the contributing factors to this condition.

To meet this situation, it was necessary to obtain cooperation between the various city departments involved, the trolley company, the bus operators, and the proprietors of stores. The only factor that could not be directly reached was the private car owner. The reason for this is obvious.

A minimum depth of snow was then decided upon for removal. Experience had taught us that five or six inches of snow of average density and uniformly distributed over a street area could be safely negotiated by motor-vehicle traffic, therefore removal operations commenced at this stage by plowing toward the curb while the street was being cleared of parked cars. Store owners were prevailed upon to clear their sidewalks to the gutter.

A tractor-driven plow was then sent through, plowing the snow from the gutter, resulting in a well-piled windrow of snow on each side of the street. A Nelson snow loader with a fleet of ten 5-ton trucks of 10-yard capacity then went into action. This type of snow loader, loading from the rear, proved most efficient, being clear of trolleys and allowing a maximum flow of traffic during the removal operation.

The average cost per cubic yard of snow removed for the year was 21 cents, which included depreciation charged off on the loader, but did not include the cost of plowing.

Snow removal from business areas can be best accomplished by intelligent cooperation between the city, utilities, and the business men of the municipality. Snappy operation of snow-removing equipment wins friends and educates the automobile operator in the advantages derived from clean streets.

PHILIP A. MERIAN,
City Engineer.

Degree of Cleanness of Streets and Parks

THE degree of cleanness of the really clean European cities cannot readily be appreciated by those who have not directed their attention to this subject. There is no way to measure or describe it. In a two-hour taxi ride about Munich the amount of litter seen was not more than could have been carried in a man's hand. There is no other city as clean as Munich, but a number of other cities in Germany approach it.

The degree of cleanness maintained in the streets and parks varied among the cities visited, and often in different parts of the same city. This was in part due to conditions of traffic, of business and of residence. Certain customs of the people made it well-nigh impossible to keep the streets clean, as, for example, where large numbers of bus tickets were cast away after use. On the other hand, a determination to keep the streets free of litter was able to surmount all difficulties in the cities where it existed.

Speaking generally, the cleanest cities were far cleaner than New York. They were clean because the people wanted them to be so and because the cleansing departments were efficient. Parks were sometimes, but not always, well cleaned. There was sometimes a disposition on the part of the public to be careless about litter in the parks, but in many instances the public was notably careful.

—From a report by George A. Soper to the Committee of Twenty on Street and Outdoor Cleanliness, New York City.

Nine Suggestions Offered for Anti-Litter Campaign

NINE recommendations, worked out by its Anti-Litter Bureau, have been forwarded by the Merchants Association to William Schroeder, Jr., Sanitation Commissioner of New York City, as follows:

Improved street sweepers' cans with automatic hinged covers.

Installation of covered collection trucks as rapidly as possible, and meanwhile rigid enforcement of regulations requiring the use of tarpaulins on open trucks.

More prompt collection of street sweepings, and heavy litter swept into piles to prevent scattering again.

Requirments for covering of ash and refuse cans by householders.

Prohibiting the sweeping of rubbish into streets by storekeepers.

Placing a greater number of refuse cans in the streets for the use of pedestrians.

Removal of heavy litter from sidewalks, as well as from streets, by street cleaners.

Increased cooperation of the magistrates in enforcing the sanitary code.

Substitution of machine sweeping or flushing for dry sweeping of streets.

Street Cleaning Costs in Kenosha

THE city of Kenosha, Wis., has a population of 60,000 and 88 miles of paved streets. The cleaning of streets is under the Director of Public Works, and in active charge of the Superintendent of Streets, who is charged with the duty of maintaining all city streets, sewers, bridges, drains, paving repairs and catch-basin cleaning, as well as street cleaning.

Two motor pick-up sweepers are used, districts with equal mileage being outlined for both units. These districts are divided so that each has about equal areas of commercial and industrial frontage, which is swept daily, while the strictly residential area is swept weekly. Each sweeper begins work at 4 o'clock in the morning, sweeping the business areas first and completing this section about 6 o'clock before the parked cars materially affect the cleaning operations.

The sweepings are deposited on the side streets from the business and heavily traveled streets, and on all other streets they are dumped on the street on which the sweeper is operating when the hopper is filled. Because of the fact that traffic fans practically all of the dirt to the gutters, the sweepers are operated along the gutters only, except in the fall when the streets are covered with leaves, and in the spring when the winter's accumulation of dirt must be removed.

One 3-yard truck operated by three men picks up the sweepings and hauls the material to the nearest dump, which may be a public dump or a low lot in the vicinity which the owner has requested to have filled. Much of the street sweepings in the residential district is in demand by citizens who apply it on gardens before seeding in the spring and in the late fall. In the downtown business section one man picks up the alley litter and places it in receptacles. One small truck with driver and helper gathers up this litter daily and hauls it to the dump, requiring about two hours each day for this work. Three white wings operate in the outlying sections, cleaning crosswalks and pavement ends where they connect with dirt streets.

During the year 78 miles of paved streets were cleaned, at the cost of $18,217.35, as follows:

Cost of hand sweeping and disposal of sweepings	$4,285.50
Operation of two pick-up sweepers and disposal of sweepings	13,931.85
Total	$18,217.35
Cost per mile	233.55
Cost per 1,000 square yards of pavement, sweeper No. 1	.31
Cost per 1,000 square yards of pavement, sweeper No. 2	.35
Cost per cubic yard of sweepings, sweeper No. 1	1.67
Cost per cubic yard of sweepings, sweeper No. 2	1.61

Sweeper operators are required to make daily reports, including the streets covered, the number of dumps made, the amount of gas, oil and grease used, and the number of gallons of water used for sprinkling. Operators will cover 22 miles per day, with an average of 17 miles per day per month.

—From a paper presented by P. J. Hurtgen, Director of Public Works, before the Tenth Annual Conference of the International Association of Street Sanitation Officials.

GAMEWELL

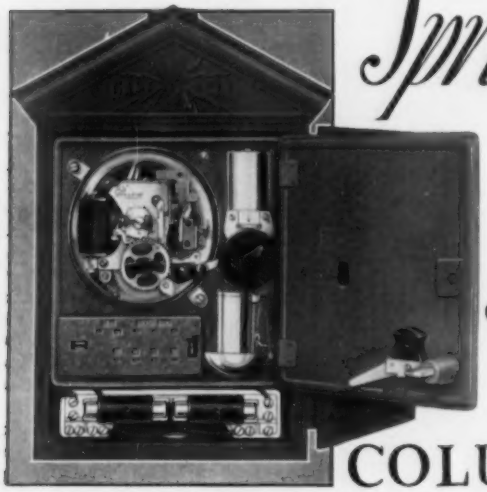
Sprinkler Watchman

PREVENTS

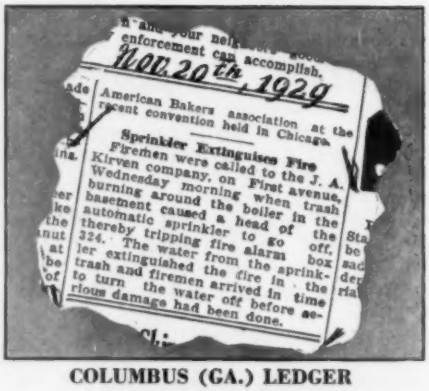
Serious Water Damage

at

COLUMBUS, GEORGIA



"SPRINKLER WATCHMAN"
(Master-Fire Alarm Box)



enforcement can accomplish.

Nov. 20th, 1929

American Bakers association at the recent convention held in Chicago.

Sprinkler Extinguishes Fire

Firemen were called to the J. A. Kirven company, on First avenue, Wednesday morning when trash burning around the boiler in the basement caused a head of the automatic sprinkler to go off, thereby tripping fire alarm box 324. The water from the sprinkler extinguished the fire in the trash and firemen arrived in time to turn the water off before serious damage had been done.

COLUMBUS (GA.) LEDGER
November 20, 1929

Seven Gamewell "*Sprinkler Watchmen*" are in service at Columbus, Georgia; the first one being installed there 8 years ago. According to Mr. T. F. Tillman, Superintendent of Fire Alarm, each of the concerns that installed a "*Sprinkler Watchman*" was allowed a reduction in its insurance rate, dependent upon the class of risk. This rate reduction was possible because of the satisfactory manner in which the "*Sprinkler Watchman*" reduces the fire and water hazard, by automatically transmitting an alarm to the fire department whenever a sprinkler head goes off. Otherwise, it would be necessary to wait until a passerby discovered the fire.

The "*Sprinkler Watchman*" (Gamewell *Master* Fire Alarm Boxes) at Columbus are connected right into the regular box circuits.

The maintenance expense amounts to practically nothing. Mr. Tillman states:

"Each '*Sprinkler Watchman*' should be tested once each month, however, we have not had occasion to do maintenance work on any of the boxes since installation.

Every fire department, equipped with a modern fire alarm system, is in a position to offer this service to the owners of sprinkler protected property. To the business houses and institutions it means a safeguard against fire and water loss. To the municipality it is a safeguard for the city treasury, by preventing losses in taxable property.

Write for descriptive literature on the "*Sprinkler Watchman.*" One of our Sales Engineers will call if you desire.

THE GAMEWELL COMPANY

Newton Upper Falls, Mass.

"A Box A Block"

"HINTSAND POINTERS" PAGE for DEPARTMENTS OF PUBLIC SAFETY

Are Fire Losses Mounting Again?

THERE are indications that last year's fire losses in the United States showed a substantial increase over the two preceding years. The *New York Journal of Commerce* estimates 1929's fire losses at $332,426,600.* This would be over 10 per cent above its calculation for 1928. Some encouragement may be found, however, in the more precise and detailed figures which the National Board of Fire Underwriters published last month for the year 1928. These give an estimated total of $464,607,102 as the fire loss of the United States in 1928, as compared with $472,933,969 in 1927—a decrease of about 2 per cent. When this is matched with the continuous increase in burnable values during the two-year period, the record seems distinctly gratifying. One might confidently predict that if returns for small cities with alert, well-equipped fire forces were separately given, an amazing reduction for such cities would be demonstrated. But there is still ample room for improvement.

Time to Paint Up the Roads

THE spring freshets of automobile traffic will soon be with us. The old family car will be gotten out and dusted off. The first fine Sunday will see a great torrent of them pouring forth onto the roads. And that same Sunday night will be livened by their return. It is time to patch up and paint up for their approach. The County Highway Officials' Division of the American Road Builders' Association offers some timely suggestions on pavement marking that may be handy just now:

"In some eastern states the practice of painting a center line on curves and bridge approaches has become so well established that laws have been enacted as a safety measure making it illegal to cross these lines, that is, to pass another vehicle going in the same direction on that part of the road centerlined.

"There is an added feeling of security in driving on a road with a centerline. It seems to warn each driver that he is entitled to one-half the road and no more. On the older 16-foot pavements carrying heavy traffic, some officials claim the extra cost of the centerline is more than made up in decreased shoulder maintenance. There is nothing that equals a white centerline for driving against glaring head lights or in a fog.

"The concrete pavement with the longitudinal center joint lends itself well to the use of a centerline. Asphalt emulsion is a good material to use in this case. Of course it is not as visible at night as the white paint, but the joint must be sealed with bituminous material in any event and the asphalt emulsion helps to do this. It costs less than white paint and can be applied cold with paint equipment."

There are many other hints useful in this connection—perhaps the best of them a liberal use of whitewash on fences, poles, trees and headwalls. The spring is a season of fog. Nothing offers greater guidance in a fog than white objects which stand out.

Courtesy Stops Accidents

THE Baltimore Safety Council has chosen as its 1930 slogan: "Courtesy Stops Accidents." An elaborate campaign including display of this legend on 53 huge billboards is now under way. The Council has demonstrated that fatalities of pedestrians almost invariably result from driving too fast or too carelessly.

Two Separate Ways of Escape from a Building

ALMOST the most elementary principle of safety in building construction is to have two separate means of escape. As the Building Exits Code of the American Standards Association puts it: "From every building or section there shall be two ways of escape as remote from each other as practicable." In old and remodeled buildings it is difficult to get adequate compliance with such a rule. In many instances an extra door is added quite close to the first one and offering no enlargement of the possibility of egress. Perhaps the greatest hope is in educating owners and architects to the reasonableness of this provision, but it is a matter of such simple, non-technical character that the public at large can be educated to insist upon this minimum of protection through effective building codes properly enforced.

Motoring a Privilege—Not a Right

THE notion seems to prevail that driving a car is a right. Quite the contrary: it is a privilege—and one that the state is amply warranted in hedging about with restrictions in the interest of public safety. Eleven states now require some proof of financial responsibility. All of the New England states now have legislation covering this matter more or less adequately. Some of these provide for various types of insurance. Others are designed to revoke the licenses of drivers with unsatisfactory judgments against them. This is something like the common law saying that every dog is entitled to one bite. The problem is a serious one, and no one of the numerous mechanisms now in use or advocated appears to be wholly acceptable. But it is a problem that cannot be neglected.

When Spring Comes—What Lessons Has the Winter Taught?

WINTER, of course, is the worst season for fires. An increase of fire-alarms is sure to accompany every cold snap. But spring is not far behind with her perils. There is no season when vigilance may be relaxed. Winter is coming also to be a period of great traffic danger. With the advance of snow removal and the tendency to keep private cars in service all the year, there are plenty of skidding accidents. Winter accidents, like winter fires, appear to be more serious and to involve more fatalities than those at other times of the year. One thing we might all do is to check over the winter's experience, see what lessons are to be learned from it, and be prepared next November to set out to make a better showing.

Another Prize Contest Sponsored by the Highway Education Board

PUPILS of the upper grammar grades and their teachers have an opportunity to win $6,500 in prizes in two contests being sponsored by the Highway Education Board. The first of these is open to all youngsters of the fifth to eighth grades under 14 years of age, for an essay on: "What I am Doing to Set a Good Example in Safety on the Highways." The teachers are invited to submit a lesson plan on: "Teaching the Essentials of Street and Highway Safety." There are 445 cash prizes for pupils and three for teachers. The first prize-winning student and teacher will be brought to Washington for a week as guest of the Board. Essays winning in state contests will be entered for the national prizes. Pupils to the number of 600,000, and 100,000 teachers, participated in this contest last year. Why not send for further particulars to the Highway Education Board, 1723 N Street, N. W., Washington, D. C.

Of Special Interest to Police and Fire Departments

are the articles in this issue on pages 103, 106, 122, 123, 131, 132, 134, 148 and 169.

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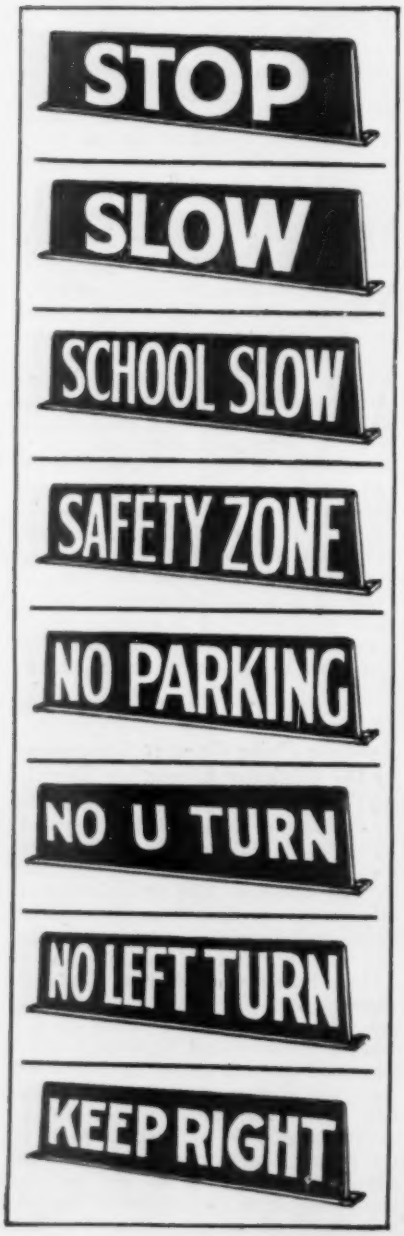
*The fire loss figures of the *N. Y. Journal of Commerce* are based on estimates of fires involving losses of $10,000 or over, with a percentage added to cover small and unreported losses. The figures are usually about a third smaller than the statistics computed by the Actuarial Bureau of the National Board of Fire Underwriters, which, because of the delays incident to compilation of complete records, are not published until about a year later. The detailed figures of the National Board for 1927 and 1928, classified under "Strictly Preventable Causes" and "Partly Preventable Causes," will appear in the 1930 MUNICIPAL INDEX.

Rubber Traffic Signals

USED

Everywhere for Any Traffic Problem



Most Effective

for

Thru Streets

R. R. Crossings

Safety Zones

Alley Stops

School Zones

Danger Points

One Way Streets

Turn Directions

Parking Control

WRITE FOR BOOKLET ON

THE STANDARD SYSTEM OF TRAFFIC CONTROL

Southern Office:
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ATLANTA, GA.

THE STANDARD TRAFFIC MARKER COMPANY
1711 E. 2nd St.
WICHITA, KANSAS

Eastern Office:
1230 St. Clair Street
CLEVELAND, OHIO

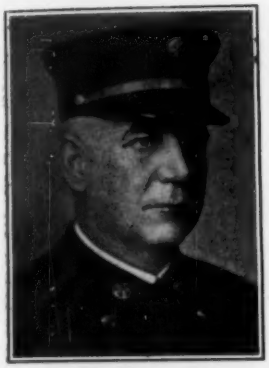
Do you mention THE AMERICAN CITY? Please do.

C. W. McPHAIL
Police Chief, Houston, Texas
(Appointed 1929)

I. D. DOVERSPIKE
Police Chief, Kittanning, Pa.
(Appointed 1927)

R. J. MULLIGAN
Police Chief, Athens, Pa.
(Appointed 1891)

JOSEPH W. HALL
Fire Chief, Clarks Summit, Pa.
(Appointed 1910)

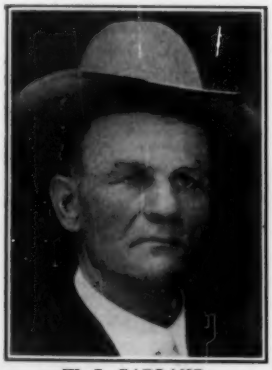


THOMAS F. BURNS
Fire Chief, Bridgeport, Conn.
(Appointed 1928)

WHO'S WHO IN PUBLIC SAFETY

The 27th of a Series of Portraits of Fire and Police Chiefs, Which Has Appeared Monthly Since January, 1928

PAUL H. SNYDER
Fire Chief, Blairsville, Pa.
(Appointed 1927)



W. I. GARLAND
Police Chief, Burkburnett, Texas
(Appointed 1922)

C. A. BRUNE
Police Chief and Fire Marshal
Zion, Ill.
(Appointed 1927)

OWEN W. KILDAY
Police Chief, San Antonio, Texas
(Appointed 1928)

IRVING P. GOODWIN
Police Chief, Nashua, N. H.
(Appointed 1916)

JOHN J. BOWER
Fire Chief, Bellefonte, Pa.
(Appointed 1928)

GEORGE W. FARRAR
Police Chief, Beardstown, Ill.
(Appointed 1915)

JOHN R. GURLEY
Police Chief, Wilson, N. C.
(Appointed 1927)

J. M. KIRKLEY
Police Chief, Reno, Nev.
(Appointed 1919)

EXPERIENCE

¶ The Lloyd-Thomas Company made its first appraisal in 1910.

¶ In 18 years we have appraised over
$12,000,000,000
worth of property for industries, municipalities, bankers and business men.

¶ Our first engagement in Tax Equalization Service dates back to 1913.

¶ Provable values are the results of experience.

¶ Scientific Tax Equalization Service furnishes:
Provable values
An accurate base for the tax levy
A basis for true equalization

¶ The cost of this Service is low—much less than for the same work carried out by any local agency.

¶ A request to any of our offices will bring to your desk complete literature—or a representative will call —without obligation.

¶ Ask for booklet A-125

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MEMPHIS
ATLANTA
BIRMINGHAM
DALLAS
SANFORD, FLA.

THE AMERICAN CITY should always be mentioned when writing for this material which is furnished free

LOOK OVER THESE NEW CATALOGS

Keep your files up to date by checking over these items each month and writing for those you need.

ODORLESS REFUSE INCINERATION
The Engineering and Research Departments of the Nye Odorless Incinerator Corp., Albany, Ga., are at the service of municipal officials faced with the problem of the disposal of garbage and rubbish. Send your address for a catalog.

TRAFFIC LANE MARKERS
The Shunk Mfg. Co., Bucyrus, Ohio, has issued a folder illustrating and describing its traffic lane markers for safety zones, parking lines, bus stops, traffic lanes, fire-hydrants, railroads, through traffic, schools and other traffic safety restrictions.

A NEW LANDING FLOODLIGHT
Full particulars regarding the new B.B.T. landing floodlight for airports of uneven contours and irregular-shaped landing areas, small airports, or airports where runway lighting only is desired, will be sent on request by the B.B.T. Corp. of America, Atlantic Bldg., Philadelphia, Pa.

A NEW PLAYGROUND CATALOG
Many new and novel pieces of playground equipment are described in the 1930 catalog of the Hill-Standard Co., Anderson, Ind., featuring the Fun-Ful line of public and private playground equipment.

SPRING PLANTING CATALOG
The Spring 1930 catalog of Storrs & Harrison Co., Painesville Nurseries, Painesville, Ohio, gives prices and descriptions of this company's line of shrubs, roses, vines, evergreens, flowers and trees.

ROAD JOINT COMPOUND
The Ric-wil Co., 1573 Union Trust Bldg., Cleveland, Ohio, will be pleased to send its literature describing Ric-wil, road joint compound for use in longitudinal and transverse joints of concrete roads, to absorb expansion and contraction and keep the joint filled and sealed.

MOTOR TRUCKS FOR CITIES
Complete information and prices on Freeman four-wheel drive trucks for all types of municipal service, may be secured without obligation from the Freeman Motor Co., Detroit, Mich.

RUBBER TRAFFIC SIGNALS
The 1930 perfected rubber traffic signal of the Standard Traffic Marker Co., Wichita, Kans., and Cleveland, Ohio, is described in literature which may be secured on request from this company.

MOTOR-DRIVEN CENTRIFUGALS
Illustrated Bulletin 1632 of the Allis-Chalmers Mfg. Co., Milwaukee, Wis., describes Allis-Chalmers motor-driven centrifugal pumps for fire and domestic water service for cities.

TRUCKS FOR CITY SERVICE
Complete data regarding General Motors trucks, in which design, engineering and construction put extra margins of strength at points of strain and stress, may be secured from General Motors Truck Co., Detroit, Mich.

LOWER WATER-WORKS COSTS
A new 48-page book, Booklet No. 1, containing valuable and important information on the construction and operation of municipal water-works systems, has been issued by the Pittsburgh-Des Moines Steel Co., 3 Neville Island, Pittsburgh, Pa.

ORNAMENTALS FOR PARKS
Andorra Nurseries, Inc., Chestnut Hill, Pa., specializes in ornamentals exclusively, distinctive in quality and variety, for street, park and all civic planting. Complete information may be secured on request.

PROTECTION FOR CONCRETE ROADS
The Philip Carey Co., Lockland, Cincinnati, Ohio, will gladly send complete information on Carey Elastite expansion joint, which is made of a special blend of asphaltic compound, sandwiched between sheets of asphalt-saturated felt, affording lasting protection for concrete roads.

SEWER-CLEANING EQUIPMENT
The Turbine Sewer Machine Co., 5210 State Street, Milwaukee, Wis., has recently issued a new Bulletin, No. 120-A, describing and illustrating its complete line of adjustable type water turbine sewer cleaners, self-propelling ferret turbines, drag type sewer cleaners, five types of sewer rods, conduit rods, windlasses, sewer braces, cable guides, etc.

SNOW-FIGHTING TRUCKS
The Walter Motor Truck Co., Inc., Queens Blvd. at 37th St., Long Island City, N. Y., will gladly send copies of its Bulletin SF-19, describing Walter Snow-Fighters, which have been scientifically designed and developed for snow displacement.

ROAD MAINTENANCE
Root hydraulically operated speed snowplows and Root Giant spring scrapers which are hydraulically operated and reversible, are described in a folder which may be secured from the Root Spring Scraper Co., Kalamazoo, Mich.

COUPLINGS FOR PLAIN END PIPE
Catalog No. 30 of S. R. Dresser Mfg. Co., Bradford, Pa., is a well-illustrated, 102-page catalog of Dresser couplings for plain end pipe, sleeves, clamps, fittings and other special and standard accessories for construction, maintenance and operation of oil, gas, air and water lines.

A DIESEL PLANT IN OREGON
Busch-Sulzer Bros.-Diesel Engine Co., St. Louis, Mo., has issued a folder describing the Busch-Sulzer diesel-engine-operated water and light plant at McMinnville, Ore., copies of which it will be pleased to send to interested municipal officials.

MOTOR TRUCKS FOR FIRE EQUIPMENT
The Stewart Motor Corp., Buffalo, N.Y., has an interesting booklet giving specifications and descriptions of its line of fire-fighting equipment.

A LIGHT-WEIGHT POWER MOWER
The Cooper power mower, which is efficient, easy to operate, and light in weight, and has many interesting features of construction and operation, is described in a folder which may be secured from the Cooper Mfg. Co., Marshalltown, Iowa.

A NEW PUMP BULLETIN
The new bulletin of Layne & Bowler, Inc., Memphis, Tenn., clearly illustrates the construction and operation of Layne deep-well pumps and is instructive and of interest to municipal water-works officials, who may secure a copy on request.

SEPTIC TANK DISPOSAL SYSTEMS
Bulletin 101 of the Stroudsburg Septic Tank Co., Stroudsburg, Pa., describes the Sep-Tank sewage disposal systems and reinforced concrete sewage disposal equipment for use in industrial villages, manufacturing plants, institutions, hospitals, schools and camps.

NON-CLOGGING SEWAGE EJECTORS
Bulletin MCN-1000-A, describing Weil Type MCN non-clogging, dry basin type sewage ejectors, and Bulletin C-900, describing Weil non-clog submerged type screenless sewage ejectors, will be sent on request to interested municipal officials by the Weil Pump Co., 215 W. Superior St., Chicago, Ill.

WATER-TOWERS AND TANKS
The R. D. Cole Mfg. Co., Newman, Ga., will gladly submit designs to meet any special requirements for any tower and tank for water storage, whether it is to be installed on a building, or on an odd location, or will require auxiliary units.

FIRE HOSE
Complete data regarding the wax and para gum treated fabric, rubber-lined fire hose made by the Fabric Fire Hose Co., 9-15 Park Pl., New York, may be secured from this company on request.

HEATERS AND THAWING TORCHES
The Mohawk Asphalt Heater Co., Schenectady, N. Y., will be pleased to send a copy of its Bulletin No. 15, describing Hotstuf concrete heaters, thawing torches, water heaters, salamanders, car thawing outfits and mortar heaters, to interested city officials on request.

EXPANSION JOINTS FOR HIGHWAYS
Literature describing the Ohio expansion joint, which consists of a center reinforcing and an expansion core and the compressible sponge rubber expansion joint, may be secured on request from the Ohio Fibrated Asphalt and Rubber Co., 304 S. Dearborn St., Chicago, Ill.

SNOW-FIGHTING EQUIPMENT
Frink Sno-Plows, which are made in six standard sizes for use on concrete, macadam or dirt roads of any contours, and which will remove a depth of snow equal to the nose height of the plow, spreading the snow at the sides of the road, are described in literature which may be secured on request from Carl H. Frink, Clayton, 1000 Islands, N. Y.

PARK BENCHES
Descriptions and price lists on Logan settees for parks and playgrounds, which are made in many styles and for hard usage, long life and comfort, will be sent on request by the Logan Co., Inc., 700 N. Buchanan St., Louisville, Ky.

TAX EQUALIZATION SERVICE
Booklet A-125 of National Civic Surveys, Inc., 4411 Ravenswood Ave., Chicago, Ill., and 220 Broadway, New York, describes Lloyd-Thomas scientific tax equalization service, which furnishes provable values, an accurate base for the tax levy, and a basis for true equalization.

DRAINING CURBSTONE
Full particulars regarding a draining curbstone that is made of heavily reinforced concrete to suit standard or special specifications and that eliminates unsightly and dangerous sewer openings, may be secured on request from the Associated Engineering Development Corp., 25 W. 45th St., New York.

A STREET SWEEPER AND SNOW BRUSH
The Detroit street sweeper and snow brush, which will sweep light snow and dirt on streets at a speed of 10 miles per hour, cleaning a path 5½ feet wide, is made by the Detroit Harvester Co., 5450 W. Jefferson Ave., Detroit, Mich., from which complete information may be secured.

SHADE TREE PROTECTION
The John Bean Mfg. Co., Lansing, Mich., and San Jose, Calif., will be pleased to send complete information regarding the Bean Super-Quad park sprayer, which is built especially for park and municipal work and has a capacity of 30 to 40 gallons a minute at from 300 to 500 pounds pressure, sufficient for fast, thorough work on the tallest and densest trees.

BRASS AND COPPER
The Chase Brass & Copper Co., Inc., Waterbury, Conn., will be pleased to receive inquiries regarding its complete line of brass and copper pipe and fittings for municipal service.

A TRAFFIC LINE MARKER
An illustrated circular telling about the Newaygo line marker, which is easily operated and moved about and cuts operating costs to a minimum, will be sent on request by the Newaygo Engineering Co., Newaygo, Mich.

TWO NEW PUMPS
The Chain Belt Co., 767 Park St., Milwaukee, Wis., has recently announced a new 3-inch diaphragm pump for all-purpose dewatering and a new 2-inch centrifugal pump which weighs only 300 pounds and is mounted on a wheelbarrow frame.

Any of these catalogs will be sent you on request. Mention THE AMERICAN CITY

Millions of Tiny Barriers say—

RUST SHALL NOT PASS

Why doesn't rust eat into Reading Genuine Puddled Wrought Iron Pipe, as it does into ordinary pipe? A microscope will tell you—and more than eighty years of experience will furnish the proof! For, throughout the structure of Reading 5-Point Pipe, millions of silicious barriers say "Stop" to corrosion.

Puddling—the time-tested way of making the original, Genuine Puddled Wrought Iron—distributes this silicious element so uniformly that rust can't find a loophole. That's why it is important to insist on getting Reading Genuine Puddled Wrought Iron, known for generations. Our name and indented spiral mark protect you.

When you install Reading 5-Point Pipe, you are sure that pipe maintenance costs will be *practically nothing* during the entire life of your building! Remember, too, that the initial cost of Reading 5-Point Pipe is only slightly higher than that of cheap, unsatisfactory pipe.

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Complete data regarding the use of EBG liquid chlorine for the sterilization of water and the disinfection of sewage, will be sent on request by the Electro Bleaching Gas Co., 9 E. 41st St., New York.

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Full details on the Eddy valve, which has many distinctive features, and the Eddy fire-hydrant, may be secured on request from the Eddy Valve Co., Waterford, N. Y.

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WATER AND GAS PIPE

Information and prices on cast iron pipe for water and gas installations, as well as on special castings and flange work, may be secured without obligation from the Donaldson Iron Co., Emaus, Lehigh Co., Pa.

WATER-MAIN JOINTS

Leadite, a self-calking material for cast iron pipe, is made by the Leadite Co., Land Title Bldg., Philadelphia, Pa., from which complete information and prices may be secured.

RHODODENDRONS AND EVERGREENS

A free illustrated price list has recently been issued by the Tennessee Evergreen Co., Lock Box 575, Elizabethton, Tenn., on its native rhododendrons and broad leaf flowering evergreens for municipal planting.

DOUBLE-CIRCULATION ASPHALT KETTLES

The construction of the new No. 84-HD double-circulation asphalt kettle involves both redesigned combustion box and melting kettle. A complete description of the kettle may be secured on request from Littleford Bros., 500 E. Pearl St., Cincinnati, Ohio.

UNIFORM CAST IRON PIPE

The United States Pipe & Foundry Co., Burlington, N. J., will be pleased to send a copy of the deLavaud handbook, which contains facts and figures regarding controlled annealing of deLavaud cast iron pipe, which gives it uniform strength and flexibility.

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Ludlow fire-hydrants, which are reliable and long-lived and have low upkeep cost, are made by the Ludlow Valve Mfg. Co., Troy, N. Y., from which information and prices may be secured on request.

NOISY MANHOLE COVERS

For particulars regarding hand and power machines with which it is possible to easily machine manhole castings in the shop or in the street to eliminate noisy rattling, city officials should write to the C. H. Lyne Foundry & Machine Co., P. O. Box 4218, Station A, Miami, Fla.

A NEW MODEL TRACTOR

Literature describing the new tractor unit, Cletrac 80-60, with a maximum 80 and a rated 60 horsepower at the drawbar and covering a wide range of utility in many kinds of work, may be secured by those interested from the Cleveland Tractor Co., 19326 Euclid Ave., Cleveland, Ohio.

LAWN-MOWER SHARPENERS

A catalog and list of users of the Peerless lawn-mower sharpener, which grinds a perfect bevel and clearance, and which, with attachments, may also be used for sharpening grass shears, sickles, scythes, axes, and skates, will be sent on request to interested officials by the Fate-Root-Heath Co., 908 Bell St., Plymouth, Ohio.

SEMI-VEHICLE-ACTUATED TRAFFIC CONTROL

A 10-page booklet on Traff-O-Matic semi-vehicle-actuated traffic control systems for minor intersections and Electro-Matic full-vehicle-actuated master traffic dispatching systems for major intersections, has been issued by the Automatic Signal Corp., New Haven, Conn.

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Complete information regarding the new Bishop Crook bracket for street-lighting installations, which has malleable iron pole plates and two lag plates which allow an adjustment to compensate for any rake in the wooden pole to which it is fastened, may be secured from the General Electric Co., Schenectady, N. Y.

TRAFFIC CONTROL EQUIPMENT

The American Crucible Products Co., Lorain, Ohio, will be pleased to send to street-lighting officials a copy of its loose-leaf catalog of Master automatic and manual traffic control equipment.

TRUCKS FOR MUINCIPAL SERVICE

The Federal Motor Truck Co., Detroit, Mich., has issued an interesting booklet describing Federal trucks for states, municipalities and public utilities, well illustrated with photographs of these trucks in service, and giving a list of cities where they are in use.

TRAFFIC SIGNS

Bulletin No. 4 of the Essco Mfg. Co., Peoria, Ill., describes Essco plain traffic signs, as well as electrically illuminated and reflecting signs.

ROAD GRADER BLADES

Catalog No. 29 of the General Wheelbarrow Co., Cleveland, Ohio, describes Empire road grader blades, which are made of a special steel having all the wearing qualities of plow steel.

RECORDING PRESSURE AND VACUUM GAGES

A new Catalog, No. 1009, on Bristol's recording pressure and vacuum gages has been issued by The Bristol Co., Waterbury, Conn., and copies may be secured on request by interested municipal officials.

SHEAR GATES AND VALVES

Coldwell-Wilcox shear gates, which provide a cheap and efficient valve for low pressure and which are made of all iron or with bronze facings on body and cover in sizes 4 to 24 inches, as well as plug-valves, sluice-gates and flap-valves, are made by the Coldwell-Wilcox Co., Water St., Newburgh, N. Y., from which complete data may be secured.

DIESEL ENGINES FOR CITIES

Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill., will gladly send complete information and data regarding Fairbanks-Morse pumps and motors for municipal service.

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The Central Foundry Co., 420 Lexington Ave., New York, will gladly send complete information and data on Universal cast iron pipe to interested municipal officials.

FIRE PROTECTION

Facts about Fedelcode protection and full information on the Fedelcode siren may be secured on request from the Federal Electric Co., 8701 S. State St., Chicago, Ill.

ASPHALT PLANTS

Specifications on Doorley portable and stationary asphalt plants, which burn either coal or fuel oil and are made in capacities of 450, 850, 1,500 and 2,000 square yards of 2-inch top soil per day, will be sent on request by the Charleroi Iron Works, Scottdale, Pa.

ASPHALT PRODUCTS

The Standard Oil Co., of New York, 26 Broadway, New York, will be pleased to furnish specifications and all other particulars on Standard asphalt products, including Binder A for surface treatment, Binder B for penetration work, Binder C for the mixing method, joint fillers for brick or block pavements, cold patch asphalt for repairing bituminous road surfaces, refined asphalt for sheet asphalt paving, etc.

TWIN-CYLINDER MOTOR MOWERS

Literature describing Coldwell lawn-mowers and rollers, as well as the twin-cylinder motors which provide abundant power for steepest grades and cutting the toughest grasses, may be secured without obligation from the Coldwell Lawn Mower Co., Newburgh, N. Y.

NURSERY STOCK FOR CITIES

City officials interested in the planting of city parks, streets, and cemeteries, should write to the W. & T. Smith Co., Geneva, N. Y., for complete information on this company's nursery stock.

SAVE WATER THROUGH METERING

Municipal officials interested in saving water and increasing revenue in their water-works departments, should secure complete information and prices on the Hersey disc water meter from the Hersey Mfg. Co., Corner E and Second Sts., South Boston, Mass.

WATER-LUBRICATED PUMPS

The Engineering Department of the Pomona Pump Co., Pomona, Calif., is ready at all times to help municipal officials in the solution of their pumping problems and to furnish prices of complete installations. Descriptive bulletins on Pomona-Westinghouse turbine water-lubricated pumps are available on request.

VOTING MACHINES SAVE MONEY

Complete information regarding the experiences of cities and towns that use voting machines and that have saved money and speeded up elections, may be secured from the Automatic Voting Machine Corp., Jamestown, N. Y.

FERNS, BULBS, SHRUBS AND TREES

The 64-page descriptive catalog of the Boyd Nursery Co., McMinnville, Tenn., describes this company's line of Tennessee ferns, well-grown evergreen seedlings for reforestation, perennials, bulbs, shrubs and shade trees.

SELF-CALKING JOINT COMPOUND

Full details regarding Hydro-Tite, a dependable self-calking joint compound which is easy to prepare and easy to pour, may be secured without obligation from the Hydraulic Development Corp., 50 Church St., New York, and 80 Boylston St., Boston, Mass.

SEWAGE TREATMENT PLANT EQUIPMENT

Book No. 462 of the Link-Belt Co., 300 W. Pershing Road, Chicago, Ill., describes Link-Belt sewage treatment plant equipment, including mechanically cleaned bar screens, the Brunotte sewage screen, the Straightline screen, Tark screens, mechanical aerators for activated sludge, collectors, etc.

PLANNING AIRPORTS

The Airport Development & Construction Co., Philadelphia, Pa., will be pleased to send complete information regarding their service in designing and building any type of airport to meet present needs and anticipate future requirements.

STEEL FORMS

Hotchkiss Steel Products Co., Inc., Binghamton, N. Y., has issued a new price list on Hotchkiss steel forms for road work, sidewalks, curbs and gutters, manholes and guard-rail posts and their interlocking steel wall forms for residential foundations and industrial buildings, which city officials may secure on request.

ORNAMENTAL TREES

A new price list covering ornamental trees, flowering shrubs and evergreens for street and park plantings, has been issued by Wyman's Framingham Nurseries, Framingham, Mass., and will be sent on request to interested city officials.

NEW STREET-LIGHTING GLASS

Complete information regarding Opalax, a new glass for street-lighting units, may be secured without obligation from the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

AIRPORT LIGHTING EQUIPMENT

Catalog No. 30 of the Airport Equipment Sales Dept., Curtiss-Wright Airports Corp., 29 W. 57th St., New York, describes and illustrates airport lighting equipment of the latest type and most improved designs.

VITRIFIED CLAY FILTER BLOCKS

A folder which may be secured from Wm. E. Dee Co., 1233 S. Wabash Ave., Chicago, Ill., introduces Dee's single-unit, glazed and vitrified clay block for the aeration and drainage of trickling filters.

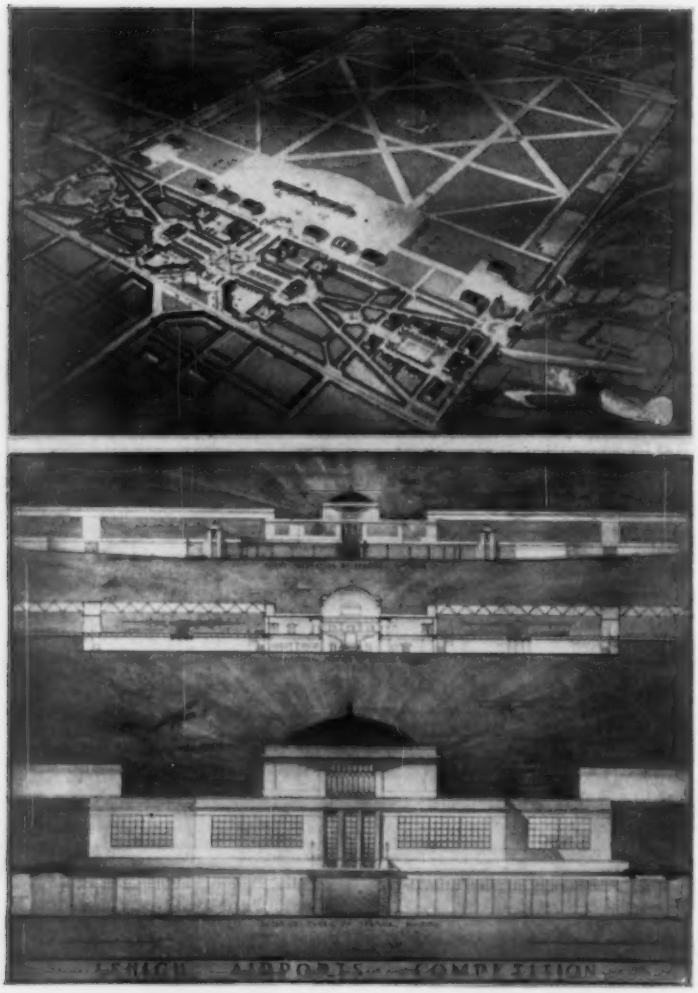
METER SETTING AND TESTING

The literature of the Ford Meter Box Co., Wabash, Ind., describes Ford meter box covers equipped with the Ford worm lock, the Ford Riser type yoke, the angle yoke, straight-line yoke, Rams-Horn meter setting, and Ford meter testing machines and calibrated tanks.

WATER TURBINES

Small water turbines of the reaction, inward flow or vortex type, equipped with either fixed or movable guide vanes and with suitable governors, according to the service required, are described in a publication issued by the DeLaval Steam Turbine Co., Trenton, N. J.

A far-sighted guide for airport development



Third-prize design, submitted by Odd Nanser. of East Orange, New Jersey, and Latham C. Squire of New York City.

A guide because the men who entered the Lehigh Airports Competition devoted their thinking first to present-day needs—new types of landing fields—adequate, modern terminals—new thoughts in respect to city planning and engineering.

Then, they went a step farther. They looked into the future and visioned aeronautics and the airport of the years to come.

Consequently, their designs have provided landing facilities that will take care of tomorrow's needs when larger, more luxurious air liners are produced. Terminals have been designed in such a manner that they can easily be enlarged to meet new demands.

And it is plain to be seen that concrete must play an important part in the construction of the modern airport—to insure both beauty and permanence.

On this and the opposite page are reproduced the third- and fourth-prize designs. The former was submitted by Odd Nansen of East Orange, New Jersey, and Latham C. Squire of New York City; and the latter by Will Rice Amon of New York City.

Odd Nansen, New York architect and city planner, is a graduate in architecture of the Norwegian University of Technology. Upon coming to the United States he became associated

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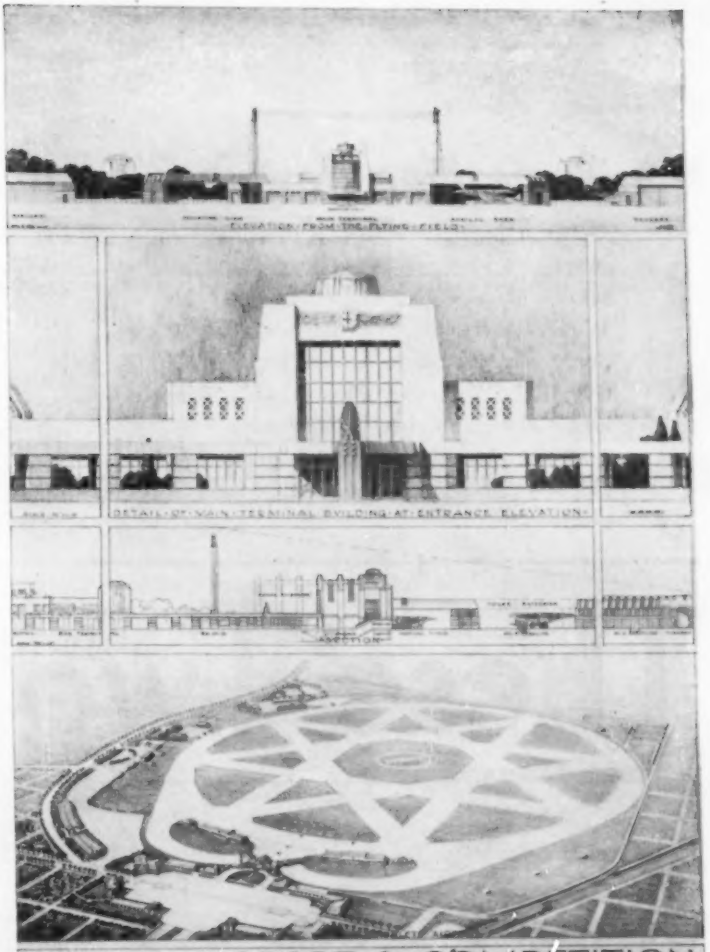
with the Technical Advisory Corporation as a city planner. The plan in which he collaborated with Latham C. Squire, suggests many new ideas bearing on the modern airport with respect to city planning.

Latham C. Squire, New York City planner, attended the University of Virginia and Colorado School of Mines, graduating from the latter as a civil engineer. He is now engaged in city and airport planning problems with the Technical Advisory Corporation.

Will Rice Amon, New York architect, is a graduate of the Massachusetts Institute of Technology. He was one of ten architects chosen to enter the final competition for design of the Columbus Memorial Lighthouse to be erected in Santo Domingo by the Pan-American Union. He is associate patron in design of the Architectural Department of New York University.

We would be pleased to have you write for more complete details on the results of the Lehigh Airports Competition. Ask us to send you a copy of our brochure, "Highlights of the Lehigh Airports Competition."



LEHIGH AIRPORTS COMPETITION

Fourth-prize design, submitted by Will Rice Amon, of New York City.

THE JURY'S DECISION

FIRST PRIZE: A. C. Zimmerman and Wm. H. Harrison, Los Angeles, Cal. (jointly) $5,000

SECOND PRIZE: C. Gifford Rich, Chicago, Ill. . . . $2,500

THIRD PRIZE: Odd Nansen, East Orange, N. J., and Latham C. Squire, New York City (jointly) . . . $1,000

FOURTH PRIZE: Will Rice Amon, New York City . $500

Honorable Mention—$100 each

W. Frank Bower, Jr., Henry L. Sandlass, Alfred A. Rothmann, jointly, of East Orange, N. J.
H. Roy Kelley, Los Angeles, Cal.
James S. Nussear, Jr., architect, and William N. S. Pugh, associate, Baltimore, Md.
Edward C. Remson, New York City.
George A. Robbins, Philadelphia, Pa.
Robert Paul Schweikher, Denver, Col.
Fred E. Sloan and Elmer A. Johnston, Chicago, Ill.
Lloyd N. F. Spicer, Bayside, Long Island, N. Y.
Edwin M. Stitt, Pittsburgh, Pa.
Charles A. Stone, U. Floyd Rible, jointly, Los Angeles, Cal.
Robert D. Stott, Howard Hutchinson, Lansing C. Holden, Jr., jointly, New York City.
Virgil Westbrook, San Clemente, Cal.

JURY OF AWARDS

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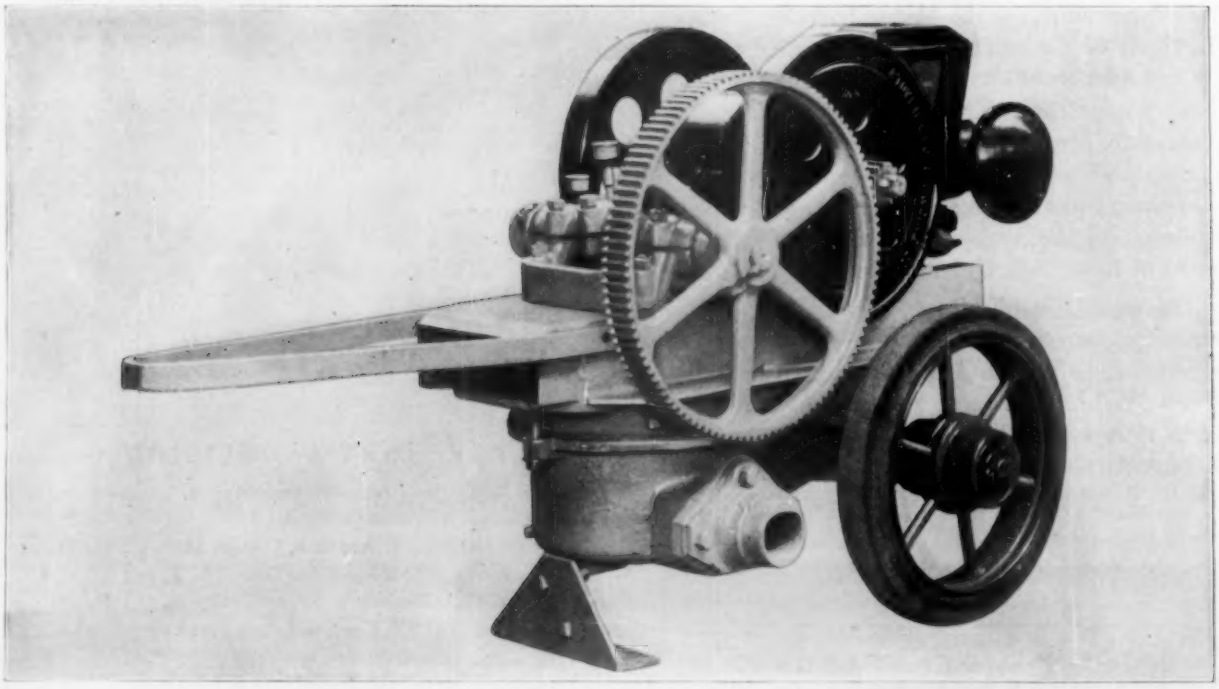

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MARCH, 1930
Vol. XLII No. 3

The American City

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Wanted:

A Substitute for the Gridiron Street System

By HENRY WRIGHT

IF there could be another Nobel prize, it should be offered for a new type of standardized street layout for our cities. There are times when special designs can, and should be, applied to meet special conditions, but for the most part our cities must in the main be laid out in a simple repetitive street plan which lends itself to easy street numbering, post-office and commercial delivery, and ready understanding on the part of the casual visitor seeking an unfamiliar address. The present, much-maligned "gridiron" street system accomplishes these things admirably, but fails in so many other ways that it is no longer to be countenanced. Variations from the gridiron plan accomplish other desirable purposes, but usually become so complicated as to prove a handicap to the routine of important daily activities.

The Chief Requirements

While the requirements of such a street system are by no means simple or well defined, the following are of special importance:

1. There should be a system of through traffic streets of ample width for rapid traffic uninterrupted by local access to private frontage.

2. The total frontage of traffic streets should be kept at a minimum, since such frontage is becoming increasingly undesirable for dwelling purposes, and an excess commercial frontage is to be avoided.

3. The remaining residential streets should be so designed as to discourage through traffic.

4. Through intersections of minor streets with major streets should be eliminated.

5. Main intersections of major streets should have ample area provided for eventual grade separation or other methods necessary to facilitate uninterrupted traffic movement on these streets.

6. Excessive costs should be avoided.

Now this is undoubtedly a large question, but of vital concern to all cities which now, for lack of an answer, go on repeating that stupid and well-nigh inexcusable blunder of the gridiron street plan. Can it be solved even if we might disregard the problem of cost? Still better, can a solution be found which will balance the present wastes of needlessly wide residential streets and unnecessarily short blocks against the needed wider traffic arteries so as to unappreciably increase the present costs of our already costly street system?

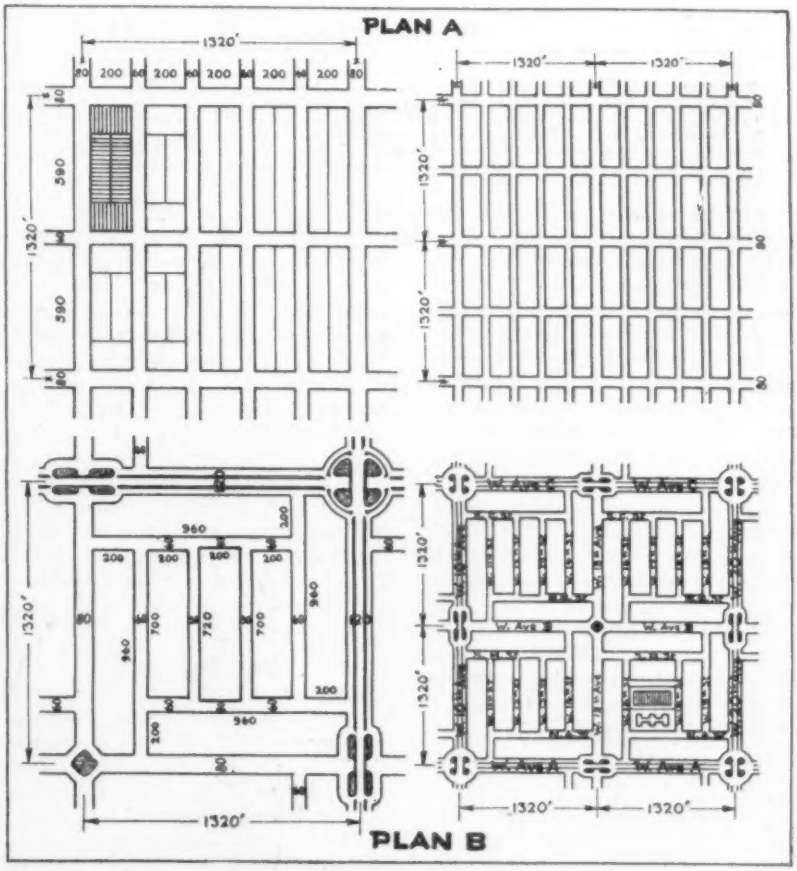


PLATE I

Plan A represents the standardized basic street system of New York City, slightly varied from actual practice to give an exact quarter-mile square (left). At the right, four such squares are shown at a reduced scale, making a half-mile square.
Plan B represents Mr. Wright's proposed substitute plan for a quarter-mile square at the left, with four of these combined into a half-mile square at the right

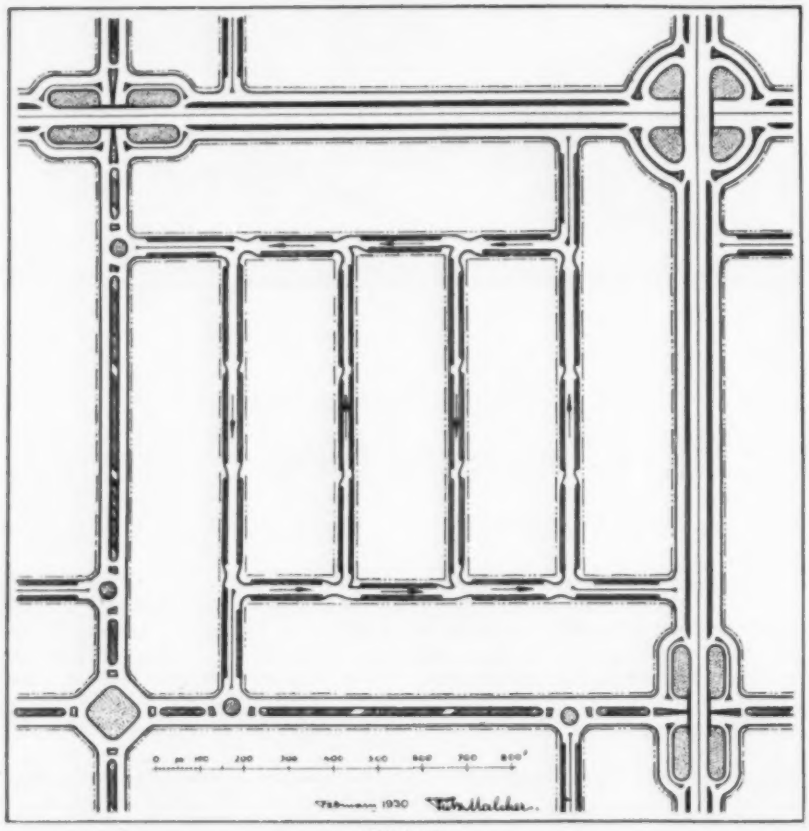


PLATE II

This drawing has been prepared by Fritz Malcher, author of a system of "street crossing without intersection of traffic," described in The American City for September and October, 1929. It shows in detail the layout of roadways and (on the one-way streets) the direction of traffic. The dotted portions indicate planting. Parking space (for temporary parking only) is shown by cross-hatching. This layout of roadways complies with the requirements formulated in the numbered paragraphs of the article

In order to have something to shoot at, the present contributor is willing to risk his good name in a cause which may seem hopeless on the face of it. He offers merely as a starter a very simple variation on the standardized basic street system of New York City. This system has main avenues, now generally 80 feet wide, at quarter-mile intervals, each way. Each square encloses 40 acres, corresponding with the standard farmland subdivision. Each quarter-mile square is then subdivided by 60-foot streets into 10 blocks 200 feet wide by 590 feet more or less, depending on the local variations from the exact quarter-mile square. The area is thus subdivided into 20 x 590 = 11,800 front feet 100 feet deep, or 1,180,000 square feet of salable land and 562,400 square feet (32¼ per cent) of street area.

NOTE.—The actual practice in New York is based upon an area slightly out of square, that is, 1,300 x 1,340 feet, by which device the blocks are made 600 feet long, but avenue frontage blocks are reduced in dept from 200 to 190 feet. This variation has been ignored in order to simplify the comparative figures in the tables at the end of this article.

A New Street System

The new system is proposed merely as a typical method of variation for this same 40-acre unit, or rather for four units occupying together ½-mile each way. Street area is saved by using fewer and longer blocks, without reducing any street widths, except two short minor streets from 60 to 50 feet in each quarter-mile unit. Main traffic streets ½-mile apart are made 120 feet instead of 80 feet wide; ½-mile intersection points 325 feet in diameter; and ¼-mile intersections 200 x 340 feet. The former is ample for the most approved form of grade separation intersection, and the latter for either a traffic "filter" or a grade separation as may be desired. In either case all traffic can move rapidly and uninterruptedly on both these half-mile and quarter-mile arteries either by separation or detour.

The "Swastika"

The internal system of each square is a matter of greater difficulty. The solution suggested is based upon the "swastika." It is a system found in ancient cities. Ernest P. Goodrich, consulting engineer, has recently noted it in Nanking, China, and is retaining it in certain areas. It is an excellent form to avoid through traffic invasion, yet when once known, should not prove confusing or inconvenient. The main swastika streets could be named continuously and numbered with the interrupted intervals alternately omitted, as in any present break in an individual street. The center square could be divided in a number of different ways and located for directory purposes with reference to its particular quarter-square in the gridiron pattern of the major arteries.

Such a plan is not revolutionary, although it meets most of the conditions previously set forth. It is perhaps too rigid in the form here shown, to meet the criticism that lots all of the same depth cannot efficiently meet the varying needs of different uses. It might be better to assume a half-mile unit rather than a quarter-mile, making the area to be locally treated more elastic—in fact, quite large enough to introduce a Radburn type of "super-block" layout. In this case the remaining half-mile arteries should be wider even than 120 feet, but there would be corresponding savings in the minor streets.

Comparison of Costs

The interesting feature of the proposed plan lies in the fact that its streets occupy practically the same area, 565,400 square feet (including the enlarged intersections), as in the present system in constant use, although street length and utilities are reduced 13 per cent in the new plan. The subdivider has almost exactly the same lot area to sell, 1,177,000 square feet, and the same frontage of 11,770 feet or its equivalent. In fact, for the time being he would have the use of the 20 feet extra width on each side of the 120-foot streets as a front yard setback for temporary small buildings, and he would not be re-

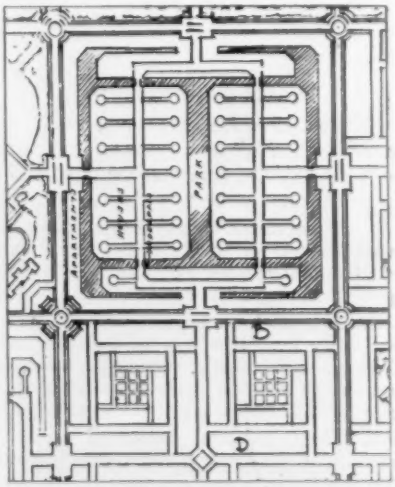


PLATE III

This shows how the plan described in the article for the interior area of the city may be merged in the suburbs into a more open development, by discontinuing the 80-foot quarter-mile streets and developing a half-mile-square unit on the principle of the Radburn plan. Closed-end lanes provide frontage for 1,000 single-family houses in each unit, while the surrounding boulevard frontage may be occupied by apartment dwellings with direct frontage on the internal block park system bordering the outer tier of single-family-house lots

quired to build the wide streets and grade separation, but merely provide building setbacks which would permit the city to make them at the right time without condemnation or expense for land acquisition.

For those who care to check the claims set forth, we have appended the tables below. At any rate, our hat is in the ring.

STREET AREA, PLAN A

5,120 x $\frac{80}{2}$ = 204,800 sq. ft.
5,960 x 60 = 357,600 sq. ft.
Total 562,400 sq. ft.

STREET AREA, PLAN B

2,580 x ½ of 120 = 154,800 sq. ft.
2,480 x ½ of 80 = 99,200 sq. ft.
3,440 x 60 = 206,400 sq. ft.
1,800 x 50 = 90,000 sq. ft.
Extra at intersections 15,000 sq. ft.
Total 565,400 sq. ft.

TOTAL AREA, PLANS A AND B

Total area, 40 acres, 1,742,400 sq. ft.
Less street area 562,400 sq. ft.
Net in private land 1,180,000 sq. ft.
Equivalent to 11,800 front feet, 100 ft. deep
Plan B has 3,000 sq. ft. less in lots; equivalent t 11,770 front feet, 100 ft. deep.

COMPARISON OF COSTS, PLANS A AND B

Omitting the cost of water and gas mains the original street cost to the sub-divider is as follows:
80-ft. street with 40-ft. pavements costs $35.00 per lin. ft.
60-ft. street with 32-ft. pavements costs 27.50 per lin. ft.
50-ft. street with 26-ft. pavements costs 20.00 per lin. ft.
(Storm sewers are figured in all streets except 50-ft. short single-block streets.)
The linear feet of half and full streets and cost of same in a 40-acre area in each case is as follows: (In Plan B the subdivider is to improve at the outset the 120-ft. streets as if they were 80 ft. wide with normal intersections).

	Old Plan A		*New Plan B*	
One-half 80-ft. street (including temporary 80)	5,120 ft.	$ 89,600	5,120 ft.	$ 89,600
Full 60-ft. street	5,960 ft.	156,425	3,440 ft.	92,880
Full 50-ft. street			1,800 ft.	36,000
	11,080 ft.	$256,025	10,360 ft.	$218,480

Skyscrapers and Spaciousness

Space Around Buildings—Not Height Limitation—A Zoning Fundamental

By THOMAS ADAMS

THE skyscraper has come to be referred to as a building that rises above neighboring buildings and creates a new sky-line. In this article I will use the term to define buildings of the tower type not excessive in bulk. The real problem is not the prevention of the skyscraper but the control of building bulks in relation to the spaces about them and to the social and economic needs of the city.

Height is only one of the elements in bulk. Comparatively high buildings over a small percentage of a lot may be less excessive in bulk than comparatively low buildings over a large percentage. Whether or not a city should permit the erection of skyscrapers or towers is one question, and whether it should permit the erection of buildings that cover so much land, and so bulky in height and width, that they injure health and cause congestion, is quite another.

My answer to the two questions is that the skyscraper in itself is desirable, wherever it is useful and economically sound; and excessive bulks are undesirable, because it has been demonstrated that they do harm to business, to property and to the city as a whole.

Cities should not approach either question, on the basis of what has succeeded financially elsewhere, or with the object of increasing land values. What is suitable for one city, on the one hand, is not suitable for another, especially when physical conditions are different. Real land values, on the other hand, are determined by the efficiency of the use of the land for the purpose of transportation, industry, commerce and residence—the creative forces that make the city, from which all revenues are derived—and not by the intensity of building.

All land in every city should be divided into two main categories for purposes of height restriction. The land which is still unbuilt upon, or covered to 50 per cent or less of the *gross* area (that is, of the area inclusive of streets and abutting public open places) with low buildings, say under six stories, should be zoned in accordance with an ideal based on the needs of health, safety and general welfare. It is probable that if this ideal is followed, the space that is needed for the above purposes will be adequate also for the needs of traffic. Leaving out of account areas of intermediary density, the other land which is already built upon in excess of the 50 per cent of gross area, and, in some cases, with buildings that are higher than the width of the street, cannot be zoned in accordance with an ideal standard. In this case we have to compromise between the ideal and the existing situation.

While I am not attempting to deal with legal problems of zoning, I think I am right in saying that any sound system of zoning based on equity and reasonableness, as well as on a well-conceived city plan is now, or will in the near future, be authorized in every state by law and favorably acted upon by the courts. On the whole, the attitude of the courts in the past has only been obstructive to zoning when it has been ill-considered.

Why Choke the Arteries of Travel?

In all large cities owners have to face the fact that high building densities are causing serious congestion, are choking the arteries of large cities, and therefore destroying their efficiency. To meet this condition there must be restriction to at least the extent herein suggested. It is needed in order that circulation may be maintained and land values may be equitably distributed. The thing that matters in respect of land values is that they be maintained in the aggregate over the whole area of a city, and not increased unduly in certain places to the benefit of the few and the injury of the many. High land prices in certain sections based on defective land uses mean, in actuality, low land values for the city as a whole, as well as being a cause of excessive financial burdens on industry and population.

The Limited Amount of Land That Can Be Usefully Occupied by Buildings

For purposes of determining what the ideal should be, cities and property owners may as well face the true situation in regard to the limited amount of land that can be usefully occupied by buildings. The experience of New York has been that land which is covered by buildings over an average of 60 per cent of the gross area, or 90 per cent of the lot, and to a height of 10 to 20 stories, is in actual fact occupying nearer 120 than 90 per cent of the private land. The reason for this seeming absurdity is that such density on private land cannot be taken care of without excessive private use of the public streets, so that, in effect, the public domain is largely oc-

cupied for private purposes. Thus a building that has no facilities on private land for loading and unloading merchandise, or for parking cars, uses both the sidewalk and the width of a motor car, on the street for parking, for a great part of each day.

The ideal condition which should be aimed at, where circumstances permit, is to zone land in such a way that not more than 40 per cent of the gross area will ever be built upon. Of course there are exceptions, but in general discussion these may be disregarded. If we take a gross area in any district, we shall find that it is not unreasonable to allow 30 per cent for streets to meet all requirements of traffic. It is probable that a considerable portion of this land will consist of highways already dedicated to public use. We may also take 10 per cent as a reasonable allowance, and not by any means extravagant, for purposes of public open space. On the remaining 60 per cent, comprising net private area, owners should be prevented from building on 20 per cent of interior lots and on 10 per cent of corner lots for business use and 35 and 15 per cent, respectively, for residential use. Thus a business lot 50 x 100 in a down-town area should have buildings on not more than 50 x 80 with a vacant area of at least 50 x 20 on interior lots, and buildings on not more than 50 x 90 with a vacant area of at least 10 per cent on corner lots. These minimum requirements for open space should be considerably exceeded in small cities and in outlying sections of large cities.

With this basic distribution of streets, public open spaces, private lot open area and building area, we can now determine what is the proper height of business buildings that should be permitted in the interests of both the community and property owners. Without this preliminary determination of open areas, we cannot fix height limits on a proper basis. In this discussion I will limit suggestions to business buildings.

Assuming then that 80 per cent of the private lot is the area to be built upon, what height should be permitted in down-town districts? We begin by recognizing that all buildings for whatever use should have for each foot of height, at least one foot of open space at right angles with the building at the front and three-quarters of a foot at the rear. Sides of business buildings naturally are excluded from regulation, except in the case of corner lots which possess two frontages, and are therefore regulated on three sides.

Except for Setbacks, Building Heights Should Not Exceed Width of Street

Under the above proposal the fronts of buildings facing on streets that are 60 feet wide should not rise higher than 60 feet, and those on streets 100 feet wide higher than 100 feet. Where a building faces on two streets, it is desirable that the narrower street should be used to determine the height; although a compromise resulting in a height of one and one-half feet vertical for one foot of horizontal space might be permitted on the narrow street, if the lot has a shallow depth on the narrow street. Where the depth of the lot is greater on the narrow than on the wide street, it is especially desirable to limit the height to correspond with the width of the narrow street.

THE SETBACK PRINCIPLE AS EXEMPLIFIED IN THE NEW YORK LIFE BUILDING, MANHATTAN

As we shall see presently, this suggestion does not mean the limitation of the heights of all parts of buildings to once the width of the street. At the height corresponding to the street width, say 60 feet, there should be provided a setback of say 25 feet and above that setback the building should be permitted to rise to an additional 50 feet, making 110 feet above the ground level. Thus we retain the 45 degree angle up to a height of 110 feet, having on the second plane of the building (on a 60-foot street) a distance of 110 feet between buildings on that plane. A further proviso might be added that there should be no limit placed on the height of building on 25 per cent of the area. This is where we get the skyscraper tower, and subject to the conditions already mentioned, such towers would be desirable. The concession to the owner of permitting the building to go to the full economic limit on 25 per cent is a sufficient exchange for his being required to keep a percentage of land free from building, apart from the fact that the unbuilt area is likely to be needed in any case for either air space or circulation.

Application of these standards presents the usual difficulties in respect to areas where over-building has already taken place. By over-building I mean where the bulk of building is greater than the above standards indicate it should be. In these areas we must compromise with existing conditions, but this should go no further than is necessary to prevent unjust discrimination or confiscation of existing rights.

Some Objections Answered

It will at once be argued that this kind of proposal is impossible to apply in large cities. We shall be told, for one thing, that such restriction on the use of land interferes with liberty more than is necessary to secure health and safety. Without admitting that it does so, I suggest that accessibility to the buildings themselves and the maintenance of the whole means of circulation, depends on some such standards being applied to buildings.

The remarkable benefits which the skyscraper has conferred on American cities are being gradually destroyed by the congestion of big buildings which is causing congestion of the traffic and obstruction of the light necessary to make them a paying proposition.

It is idle to say that one structure in the city cannot do harm when it includes a bulk of building even 200 feet high, occupying nearly the whole of the lot. Either its erection will encourage the building of more buildings of a similar type in the same neighborhood, or, if it does not, there is no justification for its being erected; since the benefit to its owner will be offset by a greater loss of benefit to other owners by "blighting" and increasing taxes on surrounding property, to an extent that seriously reduces the equities of the adjacent owners.

Another objection to be anticipated is that those who can build to the unlimited height must first acquire a lot 100 feet square, or, perhaps, 200 x 100 feet, before they can do so. Thus the owner of an existing 25-foot or 50-foot lot will be prevented from getting the advantage of building to any considerable height. Undoubtedly this must be the case, but it can hardly be called discrimination in favor of the large lot owner. Wherever a person assembles a sufficient number of lots to justify him in erecting to the unlimited height in New York, he has usually to pay heavy costs for dispossessing existing owners. The whole community and the greater number of property owners in the city should not be encumbered with a system of building

that destroys its business efficiency and means of communication, merely because land has been subdivided into small lots and many owners have insufficient area to enable them to use it for high buildings.

The owner of the 25-foot lot will get fairly adequate, and perhaps the most profitable, use of his property by building a permanent structure up to 60 feet in height. Space in the lower stories is the most valuable and very high buildings wastefully use this space. In any case there is nothing to prevent owners of 25-foot lots from assembling their lots in sufficient area to admit of high towers. Not only has the small corner lot double frontage, but its owner has the privilege of building on a larger percentage of the lot.

Probably the best illustration of the architectural effect of following the above principles that exists among modern buildings in New York is the New York Life Insurance Building, which occupies the site of the old Madison Square Garden. Although in the central part of this building the bulk is considerably greater than has been suggested as an ideal standard, its architecture and appearance indicate the type of building which the above standards would secure in future.

The Example of Washington

For cities smaller than New York the example of the District of Columbia should not be overlooked in determining proper building heights. Probably it is the nearest approach that exists in a large city towards the ideal I have indicated. Under the zoning law of March 1, 1920, the Zoning Commission was authorized to set limits not exceeding those contained in the building law, which provided for a height limit equal to the street width plus 20 feet, with a maximum of 130 feet. Of course there were certain exceptions, as there always must be. When the Zoning Commission was first set up, four heights of buildings, namely 110 feet, 85 feet, 55 feet and 40 feet, were classified, and the 85 feet and 55 feet were subsequently increased to 90 feet and 60 feet. Subject to adequate requirement of space about buildings on private lots, these are reasonable height limits for Washington with its wide streets.

Unfortunately, as complained by the National Capital Park and Planning Commission, there is a continual weakening of the limitations in Washington as a result of pressure of those interested. It is pointed out in a memorandum of the Commission issued in March, 1929, that the District should put a restraining hand on the heights of buildings, notwithstanding that the restrictions are comparatively severe, because of the congestion they create as a result of the multiplication of available floor space. The Commission adheres to the principle on which the first height limits were decided, and as advocated in this paper, namely, that the building should be approximately the same height as the width of the street, thereby giving it an angle of 45 degrees at the fronts.

The only difference in principle between the recommendations of the Commission and those here proposed is in regard to permitting an unlimited height on one-fourth of the lot. It is believed, however, that the permission to erect towers would result in the erection of skyscrapers where they were really needed, and therefore economically profitable, and secondly, that the erection of such towers would have the effect of keeping down the heights of other buildings in the city.

The Civic Center of the Future City
(Front Cover Design)

A structure, or rather a complex of structures, for housing the business affairs of the super-city of the future, is visualized by Hugh Ferriss. The municipal tower rises directly over the intersection of two of the master highways to a height of 1,200 feet. There are eight flanking towers half this height which are spaced out until with their connecting wings they enclose four city blocks. The center extends over eight adjoining blocks, where its supplementary parts rise to a height of twelve stories. There is a three-level traffic system.

The drawing reproduced on the front cover of this issue is from "The Metropolis of Tomorrow," by Hugh Ferriss (Ives Washburn, 1929), reviewed in THE AMERICAN CITY, January, 1930, page 197.

Courtesy of New York Telegram

WILL CONGESTION CAUSE THE PARK AVENUE OF THE FUTURE TO BECOME A SLUM?

A Cartoonist's Nightmare? or an Actual Possibility?

Increasing the Revenue from Metered Water Systems

By ARTHUR T. SEAMAN

MECHANICAL DESIGNING ENGINEER, METER TESTING AND CONTROL SECTION, WATER PIPE EXTENSION DIVISION, CHICAGO, ILL.

SINCE it is becoming more and more the practice throughout the country to install meters and thus sell water by the cubic foot or gallon, it is well that a study be made of these measuring devices relative to their efficiency.

There are upwards of fifteen concerns in this country engaged in the manufacture of meters. It is not my intention to discuss the relative merits of meters of different makes, or to suggest which meter to purchase—that matter should be left for the meter salesman and the buyer to determine. What will be discussed is, how to determine for any service the meter which will most accurately record the water passing through it; that is, one of proper size and type. The determination of these factors is a matter of the utmost importance, and, except in the case of consumers requiring meters of the smaller sizes, this is usually a matter which requires study and investigation of the water usage.

Current Average Practice

It is the practice in many places to allow the same size of meter as the service line from the main, and this regardless of the real demands for water which may be made upon it. In other places an effort is made to limit the size of meter to that which will handle the maximum demand. In still others it is the practice to make all meters above a certain size, usually 2 inches, of the compound type. None of these methods will result in a metered system that is as near 100 per cent as regards accuracy of registration as it is possible to obtain if the size of meter for any service is determined by the method to be explained in this article.

Careful Studies Cover Seven Years

The writer has been engaged for the past seven years in a study of meters, particularly with reference to the proper type and size for some particular service. During that time thousands of meters of all sizes and types in actual service have been studied. This study has been very thorough, and, as a result, from 15 to 25 per cent of the meters investigated were changed as to size or type.

The studies consisted of a coordination of three important factors: (1) the daily average usage for one year, this being obtained from the monthly reports of the meter reader; (2) a survey showing all water usages on the premises for pumps, roof tanks, pressure tanks, fire protection and other purposes; (3) a chart or graph representing the actual demand in cubic feet per minute, as registered by the meter for a period of at least 24 hours. This chart is obtained by means of an instrument called a meter rate recorder, which is attached directly to the meter *while in service*.

Use of the Meter Rate Recorder

The meter rate recorder consists of a special register (which can be connected to any meter) having electrical connections to the recording apparatus, which is contained in a box about 8 x 10 x 11 inches. The connecting of this recorder to a meter is very simple. The regular register is removed and the special register substituted. The wires are plugged into the recorder and the clockwork started. No further attention is necessary except to keep the clock wound, and a record of any desired length of time, be it a day or a week, is obtained.

This chart does not indicate the ac-

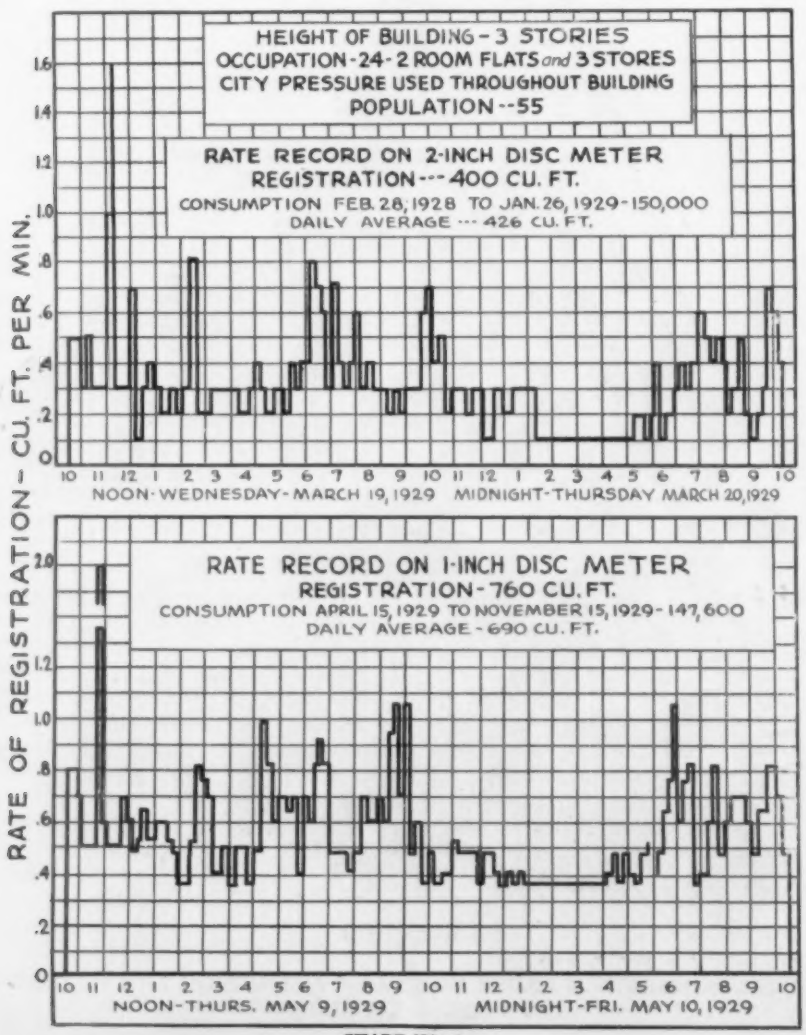
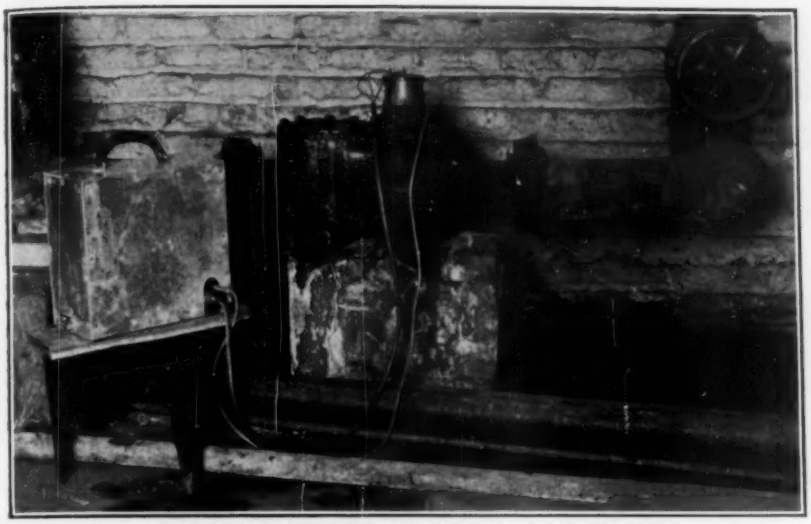

HEIGHT OF BUILDING - 3 STORIES
OCCUPATION - 24 - 2 ROOM FLATS and 3 STORES
CITY PRESSURE USED THROUGHOUT BUILDING
POPULATION --55
RATE RECORD ON 2-INCH DISC METER
REGISTRATION --- 400 CU. FT.
CONSUMPTION FEB. 28, 1928 TO JAN. 26, 1929 - 150,000
DAILY AVERAGE --- 426 CU. FT.
RATE OF REGISTRATION - CU. FT. PER MIN.
NOON - WEDNESDAY - MARCH 19, 1929
MIDNIGHT - THURSDAY MARCH 20, 1929
RATE RECORD ON 1-INCH DISC METER
REGISTRATION - 760 CU. FT.
CONSUMPTION APRIL 15, 1929 TO NOVEMBER 15, 1929 - 147,600
DAILY AVERAGE - 690 CU. FT.
NOON - THURS. MAY 9, 1929
MIDNIGHT - FRI. MAY 10, 1929

CHART NO. 1



A METER RATE RECORDER ATTACHED TO A 3-INCH METER

curacy of the meter, but it does give the actual rates of flow at which the meter is recording the water at all hours of the day and night. To one familiar with the working capacities of meters, and a knowledge of their accuracies at different rates of flow, this chart means a great deal. Of course in many cases one chart is not enough, for the usage at different times of the week or year may vary, so that several charts may be necessary in order that a study may be made of the rates of flow for various conditions of usage.

A study of the chart or charts obtained from a meter, together with the other data before mentioned, will show whether the meter in question is of the proper size and type to most accurately record the water as used or whether some other meter or combination of meters would result in a more accurate registration.

Results of Studies

In studies thus made of approximately 2,000 meters, all 3-inch and larger in size, about 25 per cent were changed, either in size or in type, and the result was an average increase in registration of 600 cubic feet per day for *each* change made. In percentage of total registered consumption, this amounted to a 25 per cent increase. On meters 1½ inches and 2 inches in size, no compilation of results embodying a large enough number to be representative has yet been made, but, from the work which has already been done, it is evident that the percentage of numbers changed will probably be larger, but that the increased registration percentage will probably drop to about 15 to 18 per cent.

Results Shown Graphically

In Charts 1 and 2 are shown examples of how the rate records obtained are used in the study of meters, and what effect the change in meters made as a result of this study had upon the registration of water used.

In the upper half of Chart 1, a graph is shown plotted from a record taken on a 2-inch meter which supplied a building having 24 flats of two rooms each and three stores, a population of 55. As will be noted, the rates of flow as recorded were never greater than 0.9 cubic feet per minute, although there was always a continuous flow. This graph indicates two things: (1) that a 2-inch meter was larger than necessary; and (2) that there were leaky plumbing fixtures in the building. This meter was replaced with a 1-inch meter, and another record taken. A graph plotted from this record is shown in the lower half of Chart 1. It will be noted that there is a great similarity between the two graphs, but the greater accuracy of a 1-inch meter at the rates of flow used is apparent, and the result has been over a 50 per cent increase in registration.

In Chart 2 are shown the results obtained from rate records taken on a 3-inch compound meter supplying an industrial plant, and on a battery of two 2-inch meters which replaced the 3-inch compound meter. On the record from

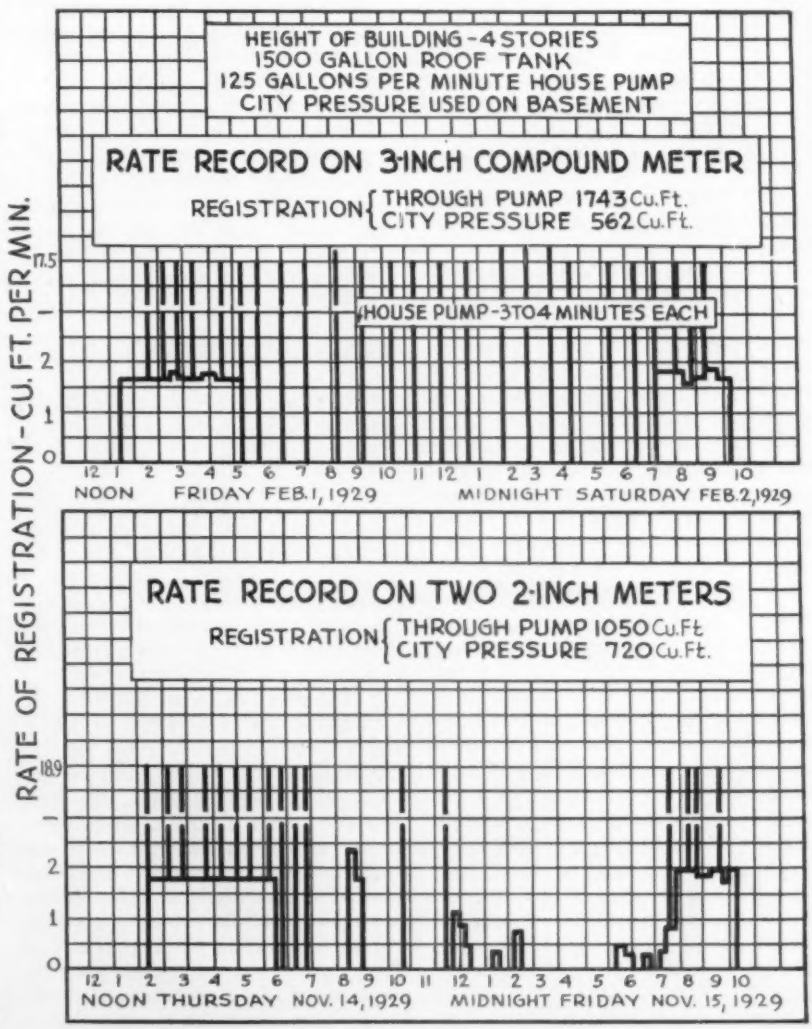

HEIGHT OF BUILDING - 4 STORIES
1500 GALLON ROOF TANK
125 GALLONS PER MINUTE HOUSE PUMP
CITY PRESSURE USED ON BASEMENT
RATE RECORD ON 3-INCH COMPOUND METER
REGISTRATION { THROUGH PUMP 1743 Cu.Ft.
CITY PRESSURE 562 Cu.Ft.
HOUSE PUMP - 3 TO 4 MINUTES EACH
RATE OF REGISTRATION - CU. FT. PER MIN.
17.5
2
1
0
12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10
NOON FRIDAY FEB. 1, 1929 MIDNIGHT SATURDAY FEB. 2, 1929
RATE RECORD ON TWO 2-INCH METERS
REGISTRATION { THROUGH PUMP 1050 Cu.Ft
CITY PRESSURE 720 Cu.Ft.
18.9
2
1
0
12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10
NOON THURSDAY NOV. 14, 1929 MIDNIGHT FRIDAY NOV. 15, 1929

CHART NO. 2

the 3-inch compound meter almost all of the low flows were recorded on the large section of the meter, which indicated that apparently the meter was operating at just about the change-over point of the weighted valve between the large and small sections.

The record taken on the two 2-inch meters indicated an increase in the low-flow consumption of 158 cubic feet, or 28 per cent. The fact that the registration of the high flows was greater during the day of the test on the 3-inch compound meter had no bearing on the accuracy of the installation, but a study of the two graphs readily shows the reason. On the upper graph there was a night usage of almost a constant rate of 0.9 cubic feet per minute, on some of the parts of the building supplied by the roof tank. The regularity of this night usage, which occurred on the upper floors only, justifies the assumption that this flow was caused by the accidental leaving open of certain fixtures at the end of the day's work by careless employees.

Automatic Chlorination of a Gravity Water-Supply

By PERCY R. SANDERS
SUPERINTENDENT OF WATER-WORKS
CONCORD, N. H.

"What You Do Not Know Does Not Worry You"

This old New England saying has worlds of truth cleverly concealed within its nine words. How frequently a new method of treatment or chlorination of water is used without the knowledge of the consumer. During this period no complaints are received, BUT, as soon as the new treatment becomes public knowledge, every imagined taste or stain is attributed at once to "those chemicals"—harmless and innocuous as they are.

CONCORD'S water-supply is obtained from Penacook Lake, three miles north of the city. The lake has an area of 368 acres and a catchment area of 3.77 square miles. The shores are wholly rocky or of gravel, and the color of the water is very low. The lake is fed almost entirely by springs. The slopes are fairly steep and are only sparsely settled; the permanent population on the entire watershed is about 75 persons, with practically no additional summer population.

Some farming is carried on, and boating and fishing are allowed on certain portions of the lake. All boating is done under license issued from the waterworks office so that a check can be kept on boat owners. There is, however, plenty of opportunity for picnic parties and travelers along the shore and on the watershed.

The city owns 98 per cent of the shore line; at the upper end of the lake there are two boathouses, owned by St. Paul's School, occupied by their respective crews, who practice and race during the spring season; the school's boats are licensed, like all others.

The supply is taken from the lake at a point 2,200 feet from the gate-houses and passes through a brick conduit along the bottom of the lake. It then passes through two sets of screens in a gate-house and flows to the city through a 20-inch cast-iron main and an 18-inch cement-lined main.

A certain portion of Concord is hilly and cannot be properly supplied by gravity, and at a point about two miles toward the city there is a pumping-station where water is taken from these mains and pumped to a 2,000,000-gallon reservoir.

The consumption varies from around 2,600,000 gallons to 3,400,000 gallons per day. The pumps are started every night at 5 o'clock and pump at the rate of 3,800,000 gallons per 24 hours for 7 or 8 hours according to the draft. The flow drops as low as 500,000 gallons per 24 hours from the time that the pumping is stopped, around midnight, until 5 or 6 o'clock in the morning, when it gradually rises until it reaches the 2,500,000 point, the maximum use by that portion of the city supplied by gravity. When the pump is started, the flow is further increased to approximately 6,250,000 gallons per 24 hours, naturally decreasing during the evening. All the water is measured at the gate-house by a 20 x 9 float-operated venturi meter, and thus these wide variations of flow during the 24 hours are accurately determined.

Chlorine Treatment Needed

As the source of supply is a surface supply and therefore liable to possible contamination, the Water Board was advised by Metcalf and Eddy, the New Hampshire State Board of Health concurring, to chlorinate the water. It was voted by the Water Board to carry out these recommendations, and Metcalf and Eddy were authorized to submit a plan for the installation of a chlorinating plant. As the water had shown a good record in the way of sanitary and chemical analyses during the 57 years that it had been in use, it was decided that a very small amount of chlorine should be used.

With a flow varying from 500,000 gallons to 6,250,000 gallons per day, a manually operated machine was out of the question, therefore an automatic type machine was recommended and installed in the fall of 1928, and it has now been in operation practically a year.

Automatic Machine Installed

Before the type of machine was decided upon, tests were made of the range of the differential heads on the venturi and it was found that they varied from 0.4-foot to 5.82 feet, or a ratio of 1 to 14.5. The pressure type of apparatus has a range ratio of 1 to 5; that is, the maximum rate of application is five times the minimum; the vacuum type has a ratio of 1 to 4, and as the flow varies in proportion to the square root of the differential heads, which would be 1 to 4 in the vacuum type, this type covered the range of flows in our system. Other difficulties in connection with the installation of the pressure type made us decide on the vacuum type of machine. A Wallace & Tiernan Co., Inc., automatic control vacuum feed chlorinator with an ortho-tolodin testing outfit was purchased.

The equipment is placed in the gate-house, a small room having been built for it, and the water is chlorinated after passing through the screens. Four meter tubes were furnished, which permit the chlorine to be applied at the rate of 30 pounds per 24 hours; 24 pounds per 24 hours; 17 pounds per 24 hours; and 15 pounds per 24 hours, respectively. When we first started the machine, we used the 17-pound tube, which gave a dose of 2.8 pounds per million gallons; later we changed to the 15-pound tube, which gives a dose of 2.5 pounds per million gallons, or 0.33-part per million.

The pressure on the line used to carry the chlorine into the water is 33 pounds, and the amount of water used to operate the machine in 24 hours is 6,000 gallons, or approximately 2,200 gallons for each million gallons chlorinated. The ortho-tolodin test is made

a short distance below the venturi meter at intervals to ascertain if any residual or free chlorine is present, and while we always get a residual at this location, in making the same test at the pumping-station we get none at all, showing that all chlorine has been absorbed.

The chlorinator is operated by the throat and inlet pressure from the venturi meter located 66 feet from the machine, the pressures being transmitted 22 feet to a differential convertor. The convertor changes the differential pressure to a vacuum which operates the chlorinator, the convertor being 44 feet from the chlorinator and 22 feet below it in elevation.

Inspection Made Regularly

Like many other automatic devices, the machine requires attention, to be sure that everything is going as it should. It is visited daily, to weigh the chlorine and check it up. The main troubles have been the sticking of the chlorine-reducing valve and the gaskets in the chlorine injector throat.

In the winter months we have a little difficulty in keeping the chlorine, the chlorine tank and the room itself at an even temperature. Heat is supplied by an ordinary oil heater with reservoir connected by a small pipe to a 10-gallon tank, the flow line of which is at the same level as the burner. Chlorine hydrate sometimes causes freezing of the chlorine-reducing valve; but these are minor difficulties and easily remedied.

The vacuum line leading from the differential convertor to the machine has to be closely watched and drained, as condensation will collect and prevent chlorination. A small bottle of ammonia is kept to detect leaks in the equipment, and a gas mask is kept just inside the main door of the gate-house for emergency use in case of bad leaks.

The Peculiarity of Complaints

The machine was in operation for several months before the fact was made public, and during that time no complaints were received at the office of any unusual taste or odor in the water.

Afterwards, however, the case was different for a while; discoloration was noted on glassware, one or two persons had boils which they thought could be attributed to the chlorine, and many people thought that the water had tasted queer for some time but hadn't known what the trouble was; we even had communications by mail assuring us that they had detected the change in the water several weks before.

Everything is quiet now; we are chlorinating regularly and continually and no one notices the difference, in the ordinary course of events; occasionally some solitary consumer will return from a vacation and inquire whether the water from pipes unused for a month or two tastes and smells queer from the chlorine, but these complaints seem to be the only reminder of the change. There has been no marked improvement in the health of our citizens, but we rest secure that we are doing our best to provide clear and sterile water.

ACKNOWLEDGMENT.—From a paper presented before the New England Water Works Association.

The Battle of the Cities for Smokestacks

THE theory that if a town can get a good factory its citizens will necessarily profit, was challenged in a radio talk on "The Battle of the Cities for Smokestacks," delivered over an extensive network of stations on February 15, by Merle Thorpe, Editor of *Nation's Business*.

Mr. Thorpe pointed out that the desire for growth is as natural in cities as in industries. "No one can question the motive," he said. "It is the application—putting the motive to work—that is the problem. Cities, eager to grow, decide that their future prosperity depends upon more factories. How get them? And, having once got them, how keep them?"

The concluding portion of Mr. Thorpe's radio talk, in which he offered some excellent advice on this subject to chambers of commerce and civic organizations generally, is here quoted in full:

"Density of population in large cities with its attendant traffic problems is a centrifugal force which is pushing business farther and farther out on the fringe of metropolitan areas. Climate is a consideration in some manufacturing processes. Nearness to raw materials and access to an adequate supply of workers are others. Distance to the market is a vital factor in the cost of distributing any product. Industrial management, if it is worth its salt, is bound to compare cities as to the availability of power, the suitability of sites, the banking facilities, taxes and the insurance requirements, the effectiveness of the public utility services, housing, educational provisions, and the water-supply.

"And most important of all, perhaps, the public spirit—the mental alertness of the citizens, the degree of civic consciousness, the ability of the citizens to pull together, to make common cause for the common good.

"The strife between our cities that leads to the demand for more and more factories is a fact of which we must take account. If wisely directed, if guided into safe channels, it should make of us a stronger nation. If permitted to run wild, it may lead us into serious difficulties.

"The career of the South Sea Bubble is the story of a ferment that went wrong. The story of American land speculation is the story of a ferment that produced great results, but with tremendous waste. Have we advanced enough in our group intelligence to reduce such waste in the future?

"Is the present stir of our cities to lead only to an undiscriminating quest for payrolls because they promise more population, more patrons for retailers, more occupants for buildings, or is it to be guided by an informed opinion as to the future of the city? If it is the latter, the quest for factories will not be undertaken until the city has learned some essential facts both about the industries it has in mind—goods they manufacture becoming obsolescent because of new inventions—but also about the community itself.

"It will not only know that new factories are desirable, but it will know, too, that the community can afford them. Factories mean street extensions, transit facilities, schools, parks and playgrounds, water-supply, sewers, police and fire protection—all these must be paid for by tax levies or by issues of bonds.

"If the factories are successful, if there is a continuing market for their products, if their payrolls bring to the city good citizens at good wages, it may be assumed that they will justify incurring these large obligations.

"But if a considerable proportion of them fail, if others barely keep going, they may prove civic liabilities. The man who builds a stable fortune examines the opportunities for investment.

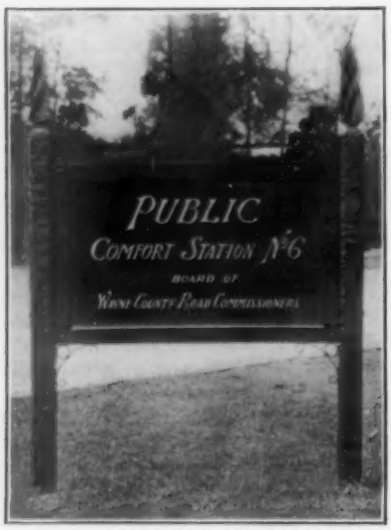
"The city that builds for an enduring future does the same.

"Group action is the order of the day. The collective intelligence of a community, properly directed, is likewise proving a tremendous force, as witness the results in a hundred cities. But the two words, 'properly directed,' are the beginning and the end of the whole matter.

"In conclusions, we should remember that men and women make cities. After all, the answer to community growth is man-power. Leadership of men whose heads are in the clouds and whose feet are on the ground, there must be, around whom the rest of us rally our resources and enthusiasm. Community vitality and vigor do not draw their strength from afar, nor from any patented plan of advancement. Like individuals, each city has its own personality, and the development of that personality depends upon careful study, skilful application, and persistently keeping at it. Cities can be made to grow and to grow wisely to the greater well-being of their citizens and to the glory of the nation."

EXHIBITS AT ST. LOUIS WATER WORKS CONVENTION

Victor E. Arnold, Chairman of the Exhibit Committee of the Water Works Manufacturers Association, 50 Church Street, New York, has announced that blanks for the use of members of the Association in applying for space at the St. Louis Convention of the American Water Works Association to be held June 2-6, will be mailed on or before April 1.



THE SIGNS ARE AS DISTINCTIVELY DESIGNED AS THE BUILDINGS

Planning for the Amenities —Not Merely for Speed— in Highway Travel

Artistic, Sanitary Comfort Stations an Important Feature

ROADSIDE development is a new term signifying the step beyond highway travel efficiency—the step leading to comfort, convenience, and esthetic enjoyment for the traveler. The term was originated by the Road Commissioners of Wayne County, Michigan, where a pioneer county-wide program of planned roadsides has been in process since 1922.

"It is true that the primary object of constructing a road is to accommodate traffic," says J. M. Bennett, County Forester, under whose direction the work has been carried on, "but its ultimate service to the public depends upon these additional things being done: signs erected; highway lights installed; trees and shrubs planted; banks and shoulders sodded; grass and weeds mown; attention given to the maintenance of the entire right-of-way; public utility installations regulated; and comfort stations provided.

"All of these," he adds, "are capable of accomplishment in a practical and economical manner if properly planned for."

In the provision of the last-named feature alone—the comfort stations—the Wayne County program is remarkable. Thirteen such buildings have been erected; bids are being advertised for one; others are to be added. These are all individually designed, architecturally attractive, fireproof structures of brick or stone with slate roofs. They are not

THE LOCATION OF THE COMFORT STATIONS

Only eight of the fourteen are shown. Many of the park areas contain two, the second being omitted on account of the small scale to which the map is drawn

crowded into the highway rights-of-way, but each occupies a park-like landscaped area of at least a half-acre adjacent to the highway, with provisions for off-road parking; or, in some cases, they are placed within the boundaries of county parks, cooperation between the two bodies, the Board of County Park Trustees and the Board of County Road Commissioners, being exceptionally close. The same members serve on both bodies, and a joint project, a county-wide parkway system designed to rival that of Westchester County, New York, is now under construction.

Each building is equipped with sanitary flush toilets for men and women; with drinking water that is tested weekly by the Board of Health, hot and cold running water for the lavatories, and public telephones. The stations are open night and day throughout the year, with a caretaker in attendance on the main traveled highways: at Cass Benton Park on the Northville Road; Phoenix Park, on the Five Mile Road; Victory Park at the intersection of Belleville Road, Sumpter Road, and the Huron River Drive; Michigan Road, in the village of Wayne; Elizabeth Park, in the village of Trenton; at the intersection of Telegraph and Bonaparte Roads; at the intersection of Harper, Morang, and Mt. Clemens Drive; and in front of Eloise on Michigan Road. Off-road parking space is provided in all cases. Several of the larger parks contain more than one roadside comfort station. Only one for each park is shown on the map.

THE HURON RIVER PARK ROADSIDE STATION
It has been mistaken for a private residence and for a public library

Wayne County has demonstrated in the conduct of these buildings not only that absolute cleanliness is possible, but

A TYPICAL GROUP OF COMFORT STATIONS
Station No. 5, on Michigan Road
(Below) Station No. 3 Telegraph Road
The Cass Benton Park Roadside Station
(Below) Station No. 6 at Harper, Morang, and Mt. Clemens Drive

that it is possible so to operate the buildings as to make them a positive asset to the community. They were originally planned and are constantly maintained to conform with building code requirements and with the requirements of the Board of Health. The illustrations show the extent to which the design of each individual building has been enhanced by an appropriate landscaped setting.

The building for Plymouth-Riverside Park, shortly to be erected, will cost approximately $20,000. It will be of brick construction, 52 by 52 feet, with a slate roof on steel rafters, and will contain a women's rest room, toilets, an open porch, and a boiler-room. Its interior design, fittings, and equipment will be similar to that of existing buildings.

Permissive Legislation Under Which the Work Is Organized

For the benefit of county or regional authorities interested in the kind of organization and the legal provisions which have made possible so progressive and comprehensive a public service, Mr. Bennett provides these paragraphs:

"The Michigan County Road Law contains provisions and conditions under which any county may adopt a road system to be administered by three county road commissioners, elected by the people (except the first year, when they are appointed by the Board of Supervisors), each to serve for a term of six years, one being elected every two years. The Road Commissioners employ the necessary organization for carrying on the work. Wayne County adopted the county road system in 1907. Funds may be available for carrying on the work from the general tax, special assessments, and bond issues.

"A state law was passed in 1913 which authorized county boards of supervisors to purchase and accept lands as gifts for park purposes. Three men appointed by the supervisors were to act as the County Board of Park Trustees. Funds were limited and few gifts were received, so in 1921 the law was amended making it possible to levy a quarter-mill tax for this purpose. In 1923 the law was further amended naming the Board of County Road Commisioners of all counties operating under the county road system, as the Board of County Park Trustees, which situation now exists in Wayne County. The personnel of both boards is the same, yet they operate under different laws and different budgets. It is a most economical and satisfactory arrangement, since the Park Board has the use of the road equipment and the public must have improved roads in order to reach the parks. Naturally, cooperation between the two Boards is 100 per cent."

Municipal Tourist Camps

Why They Sometimes Succeed and Often Fail

By HOWARD K. MENHINICK
THE SCHOOL OF CITY PLANNING, HARVARD UNIVERSITY

WE hear less today about publicly owned tourist camps than we did a few years ago. Interested to know what was happening to them, the writer inquired about them and received answers from men in 59 cities in different parts of the United States. While these answers may not represent the consensus of opinion about tourist camps throughout the United States or even about each individual camp, they at least represent in each case the opinion of an intelligent public official or citizen selected for questioning because of his knowledge of, and interest in, the constructive development of the city.

Publicly owned tourist camps were reported successful in 30 cities and unsuccessful or abandoned in 29.

Success or failure does not appear to depend upon geographical location, nor upon a site either within or entirely outside a park. Camps are neither a consistent success nor a consistent failure when operated by any particular department of the city government or by some such semi-official body as the Chamber of Commerce. Even the charging of fees does not appear to be the deciding factor, although probably the majority of the successful camps do charge fees.

To reach a conclusion as to what factors determine success or failure, it may be well to see what reasons cities gave for the failure of their tourist camps.

Private Competition

Nine cities reported that their publicly owned camps could not compete with those that are privately owned. Council Bluffs, Iowa, claims that private enterprise provides better facilities. The Denver, Colo., tourist camp is said to be deteriorating on account of the competition of privately owned cottage camps. Laramie, Wyo., said its municipal tourist camp could not stand the competition of five privately owned camp grounds. Private interests took over the municipal camp at Salt Lake City, Utah, and Tucson, Ariz., and El Paso, Texas, abandoned their camps when private competition became too strong. Publicly owned tourist camps were given up because they were no longed deemed necessary at Chattanooga, Tenn., Richmond, Va., and Tacoma, Wash.

Some Camps Become Nuisances

Existing municipal tourist camps in general appear to be either very excellent or very poor. Perhaps private competition soon puts half-way camps into the latter category. When seven cities reported that they had abandoned their camps because the camps had become nuisances, it is probable that this condition was due to neglect or lack of financial support, rather than that tourist camps contain within themselves elements which make them inherently and inevitably a nuisance wherever located. Having declared its camp a nuisance, Colorado Springs, Colo., now permits no tourist camps, either public or private, within the city limits. The camp at Columbus, Ohio, became unsanitary because of lack of funds. The one at Pittsburgh, Pa., was said to be a decided nuisance. Portland, Ore., allows none within the city limits. The tourist camp at Savannah, Ga., was abandoned because it was unsightly and because of objections to the type of people using it. This camp was located in a park and was free. Seattle, Wash., abandoned one located in a park in a residential district because it was objectionable. San Diego, Calif., abandoned one that was said to be in bad condition. The camp at Springfield, Mass., was said to be a nuisance.

Not a Legitimate Municipal Activity?

Seattle, Wash., and Tulsa, Okla., abandoned their tourist camps because they felt that the operation of them was not a legitimate activity of municipal government. The use of the Seattle camp had decreased about 25 per cent annually. The Park Department of Little Rock, Ark., wishes to "get shed" of a fairly successful tourist camp, which is located in the state fair grounds. Omaha, Nebr., has a tourist camp containing permanent brick buildings, gas and other conveniences. Consequently, the city cannot easily abandon this camp, but it says it would not build another like it. Topeka, Kans., abandoned two municipal tourist camps

This statement, prepared especially for* THE AMERICAN CITY, *is based on information secured by the writer during the Milton Fund City Planning Study Tour of Harvard University, conducted under the auspices of Professor and Mrs. Henry V. Hubbard.

which were located in parks and for which fees were charged, because these camps did not pay expenses and officials felt that the city was not justified in shouldering a portion of the cost of operating them.

What Insures Success

It is easier to determine the cause of a failure than it is to analyze a success. A successful tourist camp was usually accounted for by the charging of fees, the presence of a caretaker, and of such conveniences and comforts as running water, gas, electricity, comfort stations, laundry facilities, a dining-room, cabins and showers. Ponca City, Okla., has a camp with many of the above-mentioned conveniences. This camp is successful and paying its way, but city officials say they would abandon it if there were any private tourist camps to take care of the people.

Publicly owned tourist camps will probably therefore be a success, first, when private initiative will not or can not take care of this need of the touring public. This is the justification for many of the publicly owned camps in the early days of automobile touring. Second, they will probably be a success, even with private competition, when fees are charged and when enough money is spent on the equipment and maintenance of the camps to enable them to supply service as good as, or better than, the private tourist camps provide. But this means that the city is entering the hotel business—a municipal activity which is hard to justify. On the whole, there seems to be increasing difficulty in justifying and successfully operating publicly owned tourist camps.

Is Your City in This List of Forward-Looking Municipalities Having Planning Commissions?

At least 691 municipalities in the United States have recognized the value of farsighted planning for their orderly physical development by establishing official planning commissions or boards, according to a tabulation made by the Division of Building and Housing of the Department of Commerce in December, 1929, and released February 10, 1930. Based on the 1920 Census figures, 208 of the 691 municipalities listed are cities of over 25,000 population, while the remaining 483 are communities of varying size down to villages of less than 1,000. Several of the smallest of these had under 500 inhabitants. Geographically, the interest in city planning is also widespread, Massachusetts showing the greatest number of commissions in any one state, with California next. Considering the population and total number of communities in the state, Wisconsin, Illinois, Kansas, Texas and Florida all show a decided activity in this field.

In addition to the 691 municipalities listed as having official commissions, there have also been included 41 which have been reported as having unofficial boards or communities interested in the same objectives but functioning in an unofficial rather than an official capacity. These boards, indicated by an asterisk (*) in the list as here printed, are for the most part committees of chambers of commerce, city council committees, advisory groups, or representatives of civic organizations which have been delegated to investigate this subject.

In a statement accompanying the tabulation, the Division of Buildings and Housing says:

"The large number of municipalities of all sizes which at this time have planning commissions, and the fact that the interest in planning activity is not confined to any one region of the country, indicate a general appreciation of the need for modern city planning. Cities having planning commissions are believed to be more apt than others to exercise foresight and true economy in controlling the lay-out and improvement of streets, the location of parks, playgrounds and public works, the development of transit and transportation, provision for street traffic, and the regulation of private use of land through zoning ordinances."

The tabulation, as issued in mimeographed form by the Department of Commerce, presents data as to the number of members of each commission, the number appointed and the number serving as ex-officio members, the terms of office and the titles of the executive officers. It also indicates which of these cities have zoning ordinances in effect. Those *without* zoning ordinances are indicated by a dagger (†) in the list which follows:

City Planning Commissions in the United States

Alabama
Fairfield
Mobile

Arizona
Mesa†
Phoenix†*
Tucson

Arkansas
Little Rock
Pine Bluff

California
Alameda
Albany
Alhambra†
Altadena*
Anaheim
Arcadia
Azusa†
Bakersfield
Berkeley
Beverly Hills*
Burbank
Burlingame
Calipatria
Carmel†
Chula Vista
Claremont†
Compton
Coronado
Covina†
Culver City
Daly City
Davis
Dinuba†
El Monte†
Fillmore†
Fresno
Fullerton†
Glendale
Grass Valley†
Huntington Park†
La Mesa†
La Verne†
Lodi†
Long Beach
Los Angeles
Los Gatos
Manhattan Beach†
Maywood†*
Merced†
Mill Valley†
Monrovia
Montebello
Monterey
Mountain Park†
Mountain View†
National City†
Newport Beach†
Oakdale†
Oakland
Oceanside
Ontario†
Orange†
Oroville
Oxnard†
Pacific Grove
Palo Alto
Pasadena
Petaluma
Pomona
Redlands
Redondo Beach
Redwood City
Richmond
Riverside
Sacramento
Salinas
San Anselmo†
San Diego
San Fernando†
San Francisco
San Gabriel
San Jose
San Leandro
San Mateo
San Rafel*
Santa Ana
Santa Clara
Santa Cruz
Santa Monica
Santa Paula†
Sebastopol†
Selma
Sierra Madre
South Gate†
Stockton
Susanville†*
Tujunga†
Turlock
Ventura
Whittier

Colorado
Boulder
Denver
Grand Junction

Connecticut
Bridgeport
Bristol†
Darien
East Hartford
Fairfield
Greenwich
Hamden†
Hartford
Naugatuck†
New Britain
New Haven
New London
Stamford (town)†
Stratford
Westport†

Delaware
Wilmington

District of Columbia
Washington

Florida
Arcadia†
Coral Gables†
Deland†
Dunedin†
Fort Lauderdale
Fort Myers
Jacksonville*
Key West†
Leesburg†
Orlando
Sanford†
Sebring*
St. Augustine
St. Petersburg†
Stuart†*
Vero Beach
West Palm Beach
Winter Park†

Georgia
Brunswick
Atlanta
Augusta†
Columbus†
East Point†
Macon†

Idaho
Twin Falls

Illinois
Alton
Aurora
Barrington
Belleville†
Blue Island
Champaign
Chicago
Dalton†*
Danville
Decatur
Des Plaines
East Moline†
Elgin
Evanston
Geneva
Glen Ellyn
Harvey
Highland Park
Hinsdale
Jacksonville
La Grange
Lake Bluff
Lake Forest
Libertyville
Moline†
Morton Grove†
Oak Lawn
Oak Park
Palatine
Peoria†
Peru†
Rockford
Rock Island†*
Silvis†
Springfield
St. Charles
Urbana†
Waukegan
Western Springs
Wheaton
Wilmette
Winnetka
Worth†*

Indiana
Anderson
Batesville†*
Bloomington†
Crawfordsville†
East Chicago†
Elkhart
Evansville
Fort Wayne
Gary
Hammond†
Indianapolis
Kendallville†*
Kokomo
Lafayette†
Marion
Michigan City
Mishawaka
Muncie
New Castle†
Princeton†
Richmond
South Bend
Terre Haute
Valparaiso
Vincennes†

CITY PLANNING COMMISSIONS IN THE UNITED STATES—Continued

*—Unofficial boards or committees
†—Places without a zoning ordinance

West Lafayette
Whiting†

Iowa
Cedar Rapids
Council Bluffs
Davenport
Des Moines
Emmetsburg†
Iowa City
Mason City
Newton
Red Oak
Sioux City

Kansas
Abilene
Arkansas City†
Chanute†
Coffeyville
Dodge City
El Dorado†*
Emporia
Garden City
Great Bend
Herington
Hoisington†
Hutchinson
Junction City†
Kansas City
Lawrence
Manhattan
McPherson†
Newton†
Norton†
Osage City
Ottawa
Pittsburg
Pratt
Salina*
Topeka
Wichita
Winfield

Kentucky
Covington†
Lexington
Louisville
Paducah†

Louisiana
Crowley†
New Orleans†

Maine
Auburn†
Mount Desert
Portland
Watervillet

Maryland
Baltimore

Massachusetts
Amesbury†
Amherst†
Andover
Arlington
Ashland†
Attleboro†
Auburn†
Barnstable
Bedford
Belmont
Beverly†
Boston
Bourne†
Braintree†
Bridgewater†
Brockton
Brookline
Cambridge
Chicopee†
Clinton†
Danvers†
Dartmouth†
Dedham
Duxbury†
Easthampton†
East Longmeadow†
East Weymouth†
Everett
Fairhaven
Fall River
Falmouth
Fitchburg†
Framingham†
Franklin†
Gardner†
Gloucester
Greenfield†
Haverhill
Hingham†
Holyoke
Hudson
Lawrence†
Leominster†
Lexington
Longmeadow
Lowell
Lynn
Lynnfield†
Malden
Mansfield†
Marblehead
Medfield†
Medford
Melrose
Methuen†
Middleboro†
Milford†
Milton
Nahant†
Natick†
Needham
New Bedford
Newburyport
Newton
North Adams
Northampton
North Attleboro†
Northbridge†
Norwood
Oak Bluffs
Palmer†
Paxton
Peabody†
Pittsfield
Plymouth†
Quincy†
Reading
Revere
Salem
Saugus†
Shrewsbury†
Somerville
Southbridge†
Springfield
Stoneham
Stoughton†
Taunton
Tisbury†
Wakefield
Walpole
Waltham
Watertown
Wayland†
Webster†
Wellesley
Westfield
Weston
West Springfield
Westwood†
Weymouth†
Wilmington†
Winchester
Winthrop
Woburn
Worcester
Yarmouth†

Michigan
Bay City†
Benton Harbor
Birmingham†
Dearborn
Detroit†
East Detroit†
Flint
Grand Rapids
Jackson
Kalamazoo
Lansing
Midland
Mt. Pleasant
Muskegon
Royal Oak†
Saginaw
Ypsilanti

Minnesota
Duluth
Minneapolis
St. Paul

Mississippi
Laurel†*
Vicksburg†*

Missouri
Cape Girardeau†
Clayton†
Excelsior Springs
Kansas City
Kirkwood
Maplewood†*
Springfield†
St. Louis
University City
Webster Groves

Nebraska
Kearney
Lincoln*
Omaha

Nevada
Las Vegas†

New Hampshire
Derry†*
Manchester

New Jersey
Bayonne†
Belleville
Caldwell
Clifton
Cranford Twp.*
Elizabeth
Glen Ridge
Hackensack
Hillsdale†
Leonia
Maplewood
Midland Park†
Moorestown†
New Brunswick
North Plainfield (borough)
Nutley
Orange
Passaic
Paterson
Perth Amboy†
Plainfield
Red Bank†
South Orange
Summit*
Tenafly
Westfield
West Orange
Woodbury†

New Mexico
Las Cruces†

New York
Angola†
Ardsley
Auburn
Batavia
Bedford†
Binghamton
Blasdell†
Briarcliff Manor
Bronxville
Buffalo
Cambria†*
Canastota*
Cuba†
Dansville
East Aurora
East Rockaway
Elmira†
Garden City
Glen Cove
Glens Falls
Gloversville*
Grand Island†
Greenburg (town)
Hamburg
Hastings
Hempstead (town)†
Huntington (town)†
Irvington
Ithaca
Jamestown
Kingston
Lackawanna†
Lancaster (village)
Larchmont
Lawrence
Lindenhurst†
Lockport†
Lynbrook
Malverne*
Mamaroneck
Manhasset†
Middleport†
Middletown
Mount Kisco
Mount Vernon
New Castle
New Rochelle
New York
Niagara (twp.)†
North Hempstead†
North Tonawanda
Orchard Park
Ossining
Pelham (village)
Pelman Manor
Pleasantville*
Port Chester
Poughkeepsie
Ramapo†
Rochester
Rotterdam†
Rye
Scarsdale
Schenectady
Sherrill
Silver Creek†
Southampton†
Springville†
Syracuse
Tarrytown
Tonawanda (city)†*
Troy
Tuckahoe
Utica
Valley Stream
Watertown
White Plains
Youngstown†*

North Carolina
Aberdeen†
Asheville†
Charlotte†*
Durham
Goldsboro†
Greensboro
High Point
Raleigh
Rocky Mount
Winston-Salem†

North Dakota
Bismarck
Fargo

Ohio
Akron
Alliance†
Ashland
Ashtabula
Canton
Cheviot†
Chillicothe†
Cincinnati
Cleveland†
Cleveland Hts.
Columbus
Conneaut†
Cuyahoga Falls†
Dayton
East Cleveland
East Liverpool†
Elyria
Euclid
Fremont†
Girard†
Glendale†
Grandview Hts.
Hamilton
Harrison†
Ironton†
Kent†
Lima
Lorain
Mansfield
Marble Cliff†
Marion
Massillon†
Mt. Healthy
New Lexington†
Newton Falls
Newtown†
Niles†
North Olmsted†
Norwood
Oakwood (Montgomery Co.)
Painesville
Piqua†
Poland
Portsmouth†
Reading
Rocky River†
Shaker Heights
Springfield†
Steubenville†
Toledo
Warren
Wellington†
Westerville
Willoughby
Wilmington†
Wooster†*
Worthington
Wyoming
Youngstown
Zanesville†

Oklahoma
Avant†
Bartlesville†
Blackwell
El Reno
Enid†
Guthrie†
Lawton†
Norman*
Oklahoma City
Ponca City
Stillwater†
Tulsa

Oregon
Corvallis†
Grants Pass†*
La Grande†
Medford
Pendleton†
Portland
Salem

Pennsylvania
Abington Twp.†
Allentown†
Altoona
Ambler†*
Aspinwall†
Avalon
Bethlehem
Bradford†
Butler†
Camp Hill†
Carbondale†
Carlisle†
Charleroi†
Cheltenham Twp.†
Chester
Clairton†
Coatesville†
Connellsville
Dormont*
Duboist*
Easton
Erie†
Farrell
Fountain Hill†
Franklin†
Greensburg†
Grove City†
Harrisburg†
Hazleton
Ingram
Johnstown
Kingston†
Lancaster†
Lock Haven†
McKeesport†
Meadville†
Monessen
Monongahela†
New Cumberland†
New Castle
North Charleroi†
Oil City
Pittsburgh
Pittston†
Pottsville†
Philadelphia†
Radnor Twp.
Reading†
Scranton
Sharon†
So. Brownsville†
State College
Trafford
Uniontown†
Upper Darby Twp.†
Washington†
Wilkes-Barre†
Wyomissing
Wyomissing Hills†
York†

Rhode Island
Newport
Providence
Warwick†
Westerly

South Carolina
Columbia
Chattanooga
Knoxville
Memphis

Texas
Abilene†
Amarillo†
Austin†
Brownwood†
Childress†*
Dallas†
Denton†
Eastland†
El Paso†
Fort Worth†
Garland†
Houston†
Mount Pleasant†
San Antonio†
Tyler†
Wichita Falls†

Utah
Brigham†
Provo
Salt Lake City

Vermont
Burlington†

Virginia
Charlottesville†
Lynchburg
Norfolk
Richmond
Roanoke

Washington
Olympia*
Port Angeles†*
Seattle
Spokane†
Tacoma

West Virginia
Bluefield†*
Clarksburg†

Wisconsin
Appleton
Beloit
Cedarburg
Cudahy
Delavan†
De Pere†
Fond du Lac†
Green Bay
Janesville
Kenosha
Kiel
Madison
Manitowoc†
Milwaukee
Neenah
Oconto Falls†
Oshkosh
Park Falls†
Racine
Sheboygan
Stevens Point
Two Rivers
Waukesha
Wausau
Wauwatosa
West Bend†
Wisconsin Rapids†

Wyoming
Cheyenne†
Laramie†

CITY PLANNING FEATURES OF THE 1930 MUNICIPAL INDEX

Now in press, will include among others:

An elaborately illustrated article on the progress of civic center development in American cities.

A comprehensive, annotated index to zoning and city planning decisions of the last six years.

Articles and annotated bibliographies on parks, swimming pools airports, traffic control, etc.

Sewage Screening—
Experience with Disc-Type Screens at Rochester, N. Y.

By WILLIAM A. RYAN

CHEMIST IN CHARGE, SEWAGE TREATMENT PLANTS, DEPARTMENT OF PUBLIC WORKS, ROCHESTER, N. Y.

SEWAGE treatment at Rochester, N. Y., had its beginning in 1915, when the so-called Brighton treatment plant was placed in operation. The city is now served by four plants, of which the largest, the Irondequoit treatment plant, is located approximately six miles northeast of the geographical center of the city and on the shore of Lake Ontario. At the present time, the plant consists of a venturi meter and a meter house; two coarse bar racks; six detritus chambers; six fine screens of the disc type, which are housed in an imposing concrete, brick, and steel structure; ten Imhoff tanks; forty open sludge drying beds; a hydro-electric power-plant; and a water-supply system. The effluent from the plant is discharged through a 66-inch diameter steel conduit and submerged outlet 7,000 feet off-shore in Lake Ontario. The outlet is about 35 feet below the normal water surface.

Plant Handling Double Designed Capacity

The plant is an interesting one, from several standpoints. At the time operation was begun in 1916, it was one of the largest plants of its kind in the United States. Designed to serve a population of 200,000 persons and to treat a normal dry-weather sewage flow of 24 million gallons per day, the past 13 years have seen the daily flow increase to almost 50 million gallons without the operating difficulties usually experienced through the overloading of a plant of this type. It is quite probable that the fine screening installation has contributed materially to successful operation.

The first screens installed were four in number and of the Reinsch-Wurl disc type. The installation is unique because the screen discs are supported from bascule bridges and inclined at an angle of 30 degrees with the horizontal. Excepting for the supporting structures, the majority of the parts are constructed of cast iron and have heavy cross-sections. In this respect, the Rochester screens apparently differ from other similar installations subsequently made elsewhere in the United States.

Originally, two screens were equipped with plates having slots 2 inches long by 1/16-inch wide, and the other two units were provided with plates having perforations 2 inches long, and ⅛-inch and ⅜-inch wide respectively. The latter perforation was an experimental one, and its use was soon abandoned. At a somewhat later date, the 1/16-inch width was discarded, and for the past six years the ⅛-inch width has been the standard perforation for the plates of all screens.

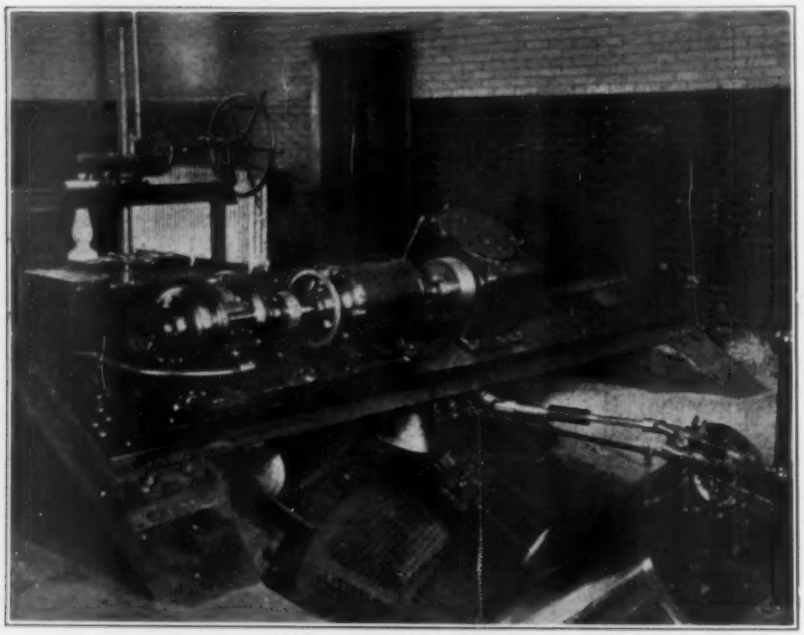
Screens Remove Floating Solids

The primary purpose is not to remove the solids which will settle out in the Imhoff tanks, but rather to prevent the floating solids in the sewage flow from entering these units or from being discharged under storm-flow conditions into the lake waters. The greater portion of the city is served by a combined sewerage system. The sewage flow diverted to the plant at times of heavy precipitation has occasionally attained a peak rate of 150 million gallons daily, even though the several storm-water regulators on the intercepting sewer system are set to open and discharge the excess flow into the Genesee River when the rate reaches 2½ times the normal dry-weather flow. The volume of screenings collected during several special tests have shown 2 to 3 per cent removal of suspended solids. On the other hand, each unit will pass a rate of more than 30 million gallons daily with a loss of head of 12 inches or less, and this is a more important factor under local conditions than the removal of suspended solids.

Two New Screens Added

With the rapid increase in the dry-weather sewage flow during the past several years, it was decided to increase the fine screening capacity of the plant, and during the summer of 1929 two additional disc-type screens were installed. Construction of an emergency by-pass conduit around the screen house was also carried out in order that the installation might be protected from possible damage in case of power failure. The provision of the two new units now permits handling a rate of 180 million gallons daily without by-passing crude sewage into Lake Ontario. This is particularly advantageous in that the shores adjacent

GENERAL INTERIOR VIEW OF THE FINE SCREEN HOUSE AT THE IRONDEQUOIT SEWAGE TREATMENT PLANT, SHOWING THE NEW SHEVLIN DISC TYPE SCREEN IN THE FOREGROUND



CLOSE-UP OF THE INLET SIDE OF THE SHEVLIN DISC TYPE SCREEN, SHOWING THE MOTOR DRIVE CONTROL AND VARIABLE SPEED TRANSMISSION AND VERTICAL TYPE REDUCTION GEAR

to the treatment plant are used during the summer months by a large number of bathers.

The two screens recently added were furnished by the Shevlin Engineering Co., of New York City. While similar to those previously installed by the same organization at Rye, N. Y., they have several new features worthy of mention. Furthermore, they are much more simple and compact than the four screens originally provided at Rochester. The new units are constructed of cast, forged and structural steel, the disc and cone plates being supported by a fabricated framework of the latter material. The shafts are stationary and the heavy bascule bridge supports of the earlier design have been eliminated. The 12-foot diameter disc is driven direct from a single main-drive shaft, which also revolves the disc and cone brushes, the outer periphery of the disc being provided with a toothed ring. The number and kinds of gears and pinions and shaft bearings required for operation of the older type of screen have been greatly reduced in the new design. All bearings except those on the revolving brush spider are lubricated from a single Keystone high-pressure lubricator having a capacity of 8 pounds of grease.

Variable Speed Possible

From an operation standpoint, however, probably the most important addition is that of a variable-speed transmission unit, thereby permitting the use of a standard constant-speed squirrel-cage type induction motor. The transmission unit, which is totally enclosed, enables the operator to vary instantly the lineal travel of the screen disc from 7 to 27 feet per minute. With such an arrangement, it is possible to regulate the disc speed to meet the existing flow conditions. Furthermore, it is believed that the wear on the brushes will be reduced considerably with a slackening of screen speed during times of low and night sewage flows. The original screens are driven by slip-ring type induction motors with the control so arranged as to furnish in theory a 50 per cent reduction in motor speed. However, this arrangement is not satisfactory in practice, because at times of low flow the suspended solids are greatly reduced and the screens relieved of practically all load other than friction. Under such a condition, the motors tend to run at synchronous speed, even though all available control resistance is connected into the secondary circuit. From observation of operation of the new units, there appears to be a more or less critical relation between screen disc rotation and the rate of sewage flow thereto. The ability to obtain at will a definite variation in the speed of the screen disc results in less loss of head and much more effective cleaning of the screen plates.

How a Tree May Be Valued

To the Editor of THE AMERICAN CITY:

I have been reading with more than usual interest an article in the February issue, page 154, on "Estimating the Damage Done by Widening a Road Lined with Trees." There certainly is a very definite commercial value for trees in parks and along our roadsides, not to mention those upon private estates.

We have been developing a formula for arriving at the value of trees and take as our basic value $1.00 per square inch for the sectional area of the trunk at breast height, and modify this by several factors. It is evident that a sugar maple is more valuable as a shade tree than a Carolina poplar and that a tree along the roadside or on a front lawn may be much more valuable than the same tree behind the residence or in a relatively obscure place. We have assigned to each of these factors, namely, species and locality, 50 points each, really per cent, and multiply the basic value by the sum of the two. Our next factor is the condition of the tree, and, if this were perfect, there would be no change in the value; otherwise, there would be a corresponding reduction. It is also obvious that a tree in a section where the residential land values are high would presumably be more valuable than in areas where land is relatively cheap. A tree in the metropolitan areas of Philadelphia, New York or Boston should be decidedly more valuable, other things being equal, than one that is hundreds of miles from the larger centers of population. We have taken as unity a residential land value of $2,000 per acre, and make a proportional increase or decrease for the valuation. It is necessary to distinguish between residential and commercial land values if they are to be used in estimating the value of a tree.

It is believed that the formula, $\pi r^2 (S + L) C \times E$, in which S, L, C and E represent, respectively, the species of the tree, the location of the tree, the condition of the tree and the residential value per acre, $2,000 being taken as unity, is an excellent method of valuing trees when one dollar per square inch of the sectional area at breast height is taken as the basic value.

It may be necessary to modify the formula in some respects. It is the writer's belief that this is far better than a general estimate which does not take into consideration the factors given above.

E. P. FELT,
Director and Chief Entomologist, Bartlett Tree Research Laboratories.
Stamford, Conn.

True economy, for the city as well as for the citizen, consists not only in avoiding waste but in spending wisely.

Flexible Progressive Traffic Control Plans—A Simplified Method of Calculating

By C. A. GLOCK

REVIEWING the different methods of controlling traffic from a central station, we find the first traffic signal system operating all signals simultaneously. This system soon proved inefficient, and a control was designed that would always give a "go" signal to a car proceeding at a certain speed—the progressive control. The signals were set to operate in a predetermined sequence and would so operate indefinitely.

Methods of Varying Progressive Controls

It soon became evident, however, that the value of this progressive control depended largely on the distances between the signaled intersections. If they were too close together, the efficiency of this control was low, and it would not handle the traffic peak. It became necessary to find some method of varying the control system, whenever necessary during the day, to take care of changed traffic conditions. These adjustments should be made at the central control station and should not require over a certain number of control wires.

First, a variable adjustment of the time required to complete one cycle of operation was introduced. This adjustment would regulate the traffic speed, and it was assumed that with increased traffic speed a proportionally larger number of cars could be handled. This, however, was not correct, as cars traveling faster have to keep at greater distance from each other and, in addition, the time each intersection is open will be cut down in proportion with the reduced cycle. By calculating the maximum volume of traffic handled, as shown later, it can be proved that an increase of 25 per cent in speed, from 15 to 18¾ miles per hour, will handle only 6 per cent more traffic than at the lower speed.

The disadvantage of the reduced "go" time was partly remedied by a design that would keep constant the time each intersection is open in direction of the main street, and the variation of the cycle that used to affect both "go" times would then affect only the side street. This system will not work, however, if there is appreciable traffic in the side streets.

The latest step is a control which varies the sequence in which the intersections follow one another. A one-wire circuit is required to hold the intersection controllers in a predetermined sequence. It is only necessary to switch from one circuit to another, controlling another sequence, and thus any desired traffic control plan, as the hour may require, can be put into operation in an instant. This control, in combination with the two previously mentioned adjustments, allows a very flexible and efficient traffic regulation.

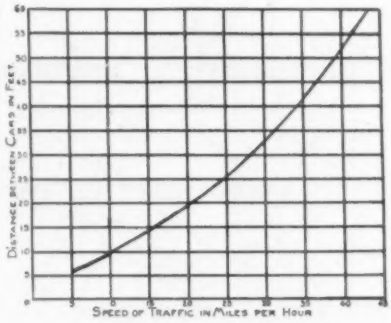


FIG. 1. SPEED-DISTANCE GRAPH

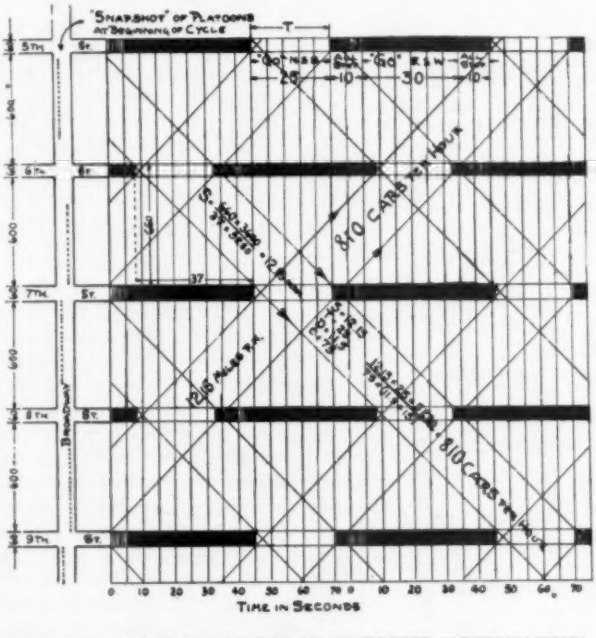


FIG. 2. TIME-SPACE GRAPH FOR PROGRESSIVE (ALTERNATING) CONTROL

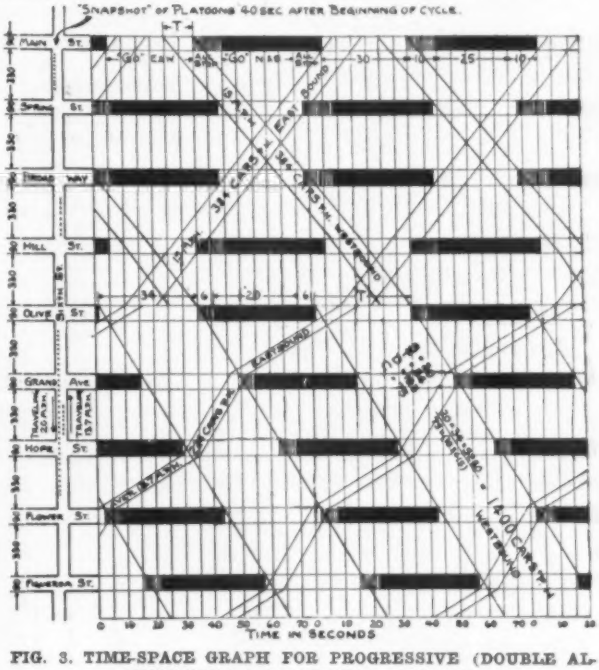


FIG. 3. TIME-SPACE GRAPH FOR PROGRESSIVE (DOUBLE ALTERNATING AND ONE-WAY) CONTROL

The complex problems created by the irregularities of traffic and the inconsistent layout of streets paralleling each other and crossed by heavy traffic flows in transverse direction, make it imperative for any city to regulate its traffic according to an efficient, flexible progressive control plan which must be effective in all four directions. It is the endeavor of the writer to point out, to municipal traffic officials, how such a plan is designed and calculated, with special consideration of the problems of rush-hour traffic.

Traffic Graphs

The accompanying graphs show how a traffic control plan in a large city can be worked out. The time-space graphs (Fig. 2, 3 and 4) give the location of the cars, traveling with a constant speed through the controlled area, as a function of the time; this is represented by a straight line, the derivative of which is proportional to the speed. The first and the last cars of every platoon are represented by two parallel lines. Their vertical distance gives the length of the platoon.

By means of such graphs it is easy to determine the volume of traffic which can be handled by a certain control plan. The speed (S) of the traffic can be taken out of the time-space graph, as well as the time (T), required for a whole platoon of cars to pass a certain intersection. The diagram in Fig. 1 gives the average distance (D) which cars, going with the speed (S) will keep away from each other, and, finally, the time required for one cycle of operation (C) is also known.

The formula

$$\frac{S \times T \times 5{,}280}{C \times (D + 15)}$$

gives the maximum number of cars per hour that can be handled by the control system without causing congestion. This formula is based on a single line of traffic each way, assuming that no left-hand turns or street cars or other obstructions hold up the regular flow of traffic.

Three Kinds of Progressive Control

There are, in principle, only three kinds of progressive control systems that can be used on a traffic plan. If the blocks between centers of intersections are over 600 feet long, the alternating system can be used, as in Fig. 2. Looking down Broadway, one sees a "go" signal every second intersection. If the blocks are shorter than 600 feet, the traffic speed becomes too slow with the alternating system, and it is necessary to run two or sometimes even three intersections simultaneously. Looking down a street with the double alternating control, one sees two "go" signals alternating with two "stop" signals. The efficiency of this control is considerably lower than of the alternating control, because the traffic platoons are much shorter and only a part of the "go" time is utilized; see Fig. 3, between Main and Hill Streets.

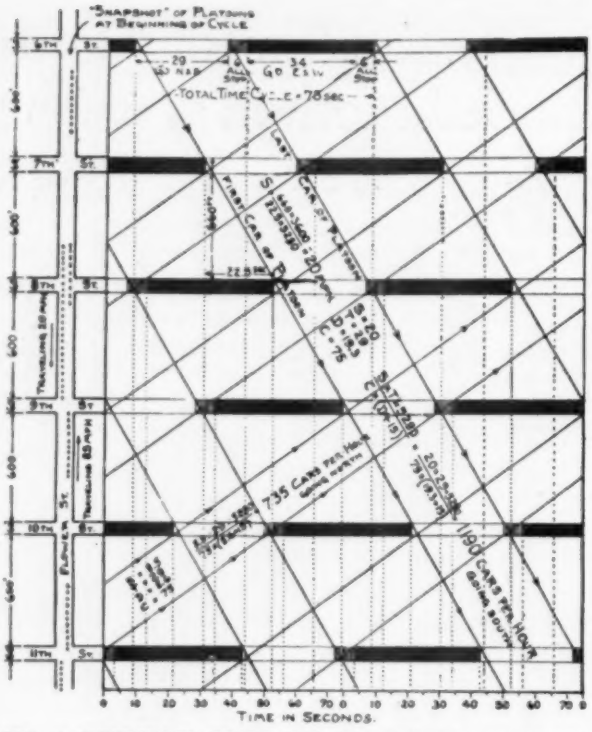

"Snapshot" of Platoons at Beginning of Cycle
Total Time Cycle = 78 sec
First Car of Platoon
Last Car of Platoon
735 Cars per Hour going North
190 Cars per Hour going South
Time in Seconds

FIG. 4. TIME-SPACE GRAPH FOR PROGRESSIVE (ONE-WAY) CONTROL

If the traffic is flowing with about equal volume on both sides of the streets, the two control systems just mentioned are the only ones practical. Even if the second one is not efficient, it will do for the light traffic during the day. At the traffic peak hours, however, the conditions are different and a third system should be applied.

The peak traffic is generally running on one side of the street only, and an efficient control should consider this one-way traffic exclusively. The man who drives downtown during the evening rush uptown will not mind if he finds now and then a signal against him, but the rush traffic itself ought to go fast and without delays. Fig. 4 illustrates this one-way progressive control system. It can be laid out for any speed, and the distances between blocks are of no bearing.

A Practical Example

The traffic control plan for the evening traffic peak in Los Angeles, shown in Fig. 5, is a combination of the three control systems. In the area east of Hill Street is two-way traffic. Therefore, the alternating control is used on the north-and-south streets. The double alternating control is the only feasible one on east-and-west streets, because of the short blocks. West of Hill Street a one-way progressive control is used, progressing from east to west and from north to south with a speed of 20 miles per hour. The number of cars handled in each case gives a comparison between the systems. The volume of traffic handled in the east-to-west direction west of Hill Street is almost four times that which can be handled east of Hill Street.

This traffic control plan is for the evening peak exclusively. For other traffic conditions, during the day, different control plans have to be worked out, based on the same ideas, and, by means of the variable sequence control, they can be placed in operation as the hour requires.

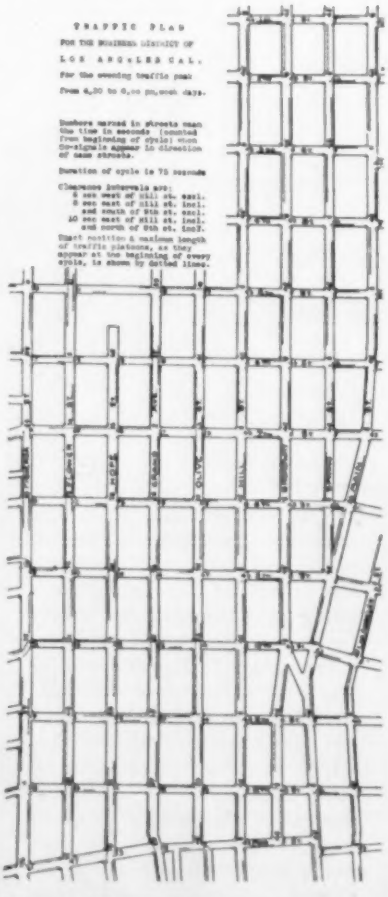

TRAFFIC PLAN
FOR THE BUSINESS DISTRICT OF
LOS ANGELES CAL.
For the evening traffic peak
from 4,30 to 6,00 p.m. each day.
Numbers marked in streets mean the time in seconds (counted from beginning of cycle) when the signals appear in direction of said streets.
Duration of cycle is 75 seconds
Clearance intervals are:
6 sec west of Hill st. excl.
3 sec east of Hill st. incl. and south of 9th st. excl.
10 sec east of Hill st. incl. and north of 9th st. incl.
Chart notation & maximum length of traffic platoons, as they appear at the beginning of every cycle, is shown by dotted lines.

FIG. 5. PLAN FOR PROGRESSIVE CONTROL WITH SEQUENCE SETTING FOR EVERY INTERSECTION

Other Discussions

of this new and important problem appeared in this journal during 1929. See "Proper Timing of Progressive Traffic," September," page 134; and "San Francisco Studies the 'Through' Street and 'Stop' Sign Problem," October, page 122.

Results of a Year's Activities of the City and County Planning Committee of a Chamber of Commerce

By J. OTIS GARBER
SECRETARY,
BUREAU OF CIVIC AFFAIRS,
THE TOLEDO CHAMBER OF COMMERCE

THE cooperation of public officials and the support of the city's newspapers enabled the Toledo Chamber of Commerce, through its City and County Planning Committee, to carry on an extensive planning program during 1929, its first year of operation. Its list of major accomplishments has definitely placed the Chamber of Commerce as the leader in the effort to create a genuine, lasting civic interest in city and county planning in Toledo.

The City and County Planning Committee is composed of eleven leading business and professional men. George D. Lehmann, Chairman of the Lucas County Planning Commission and member of the City Plan Commission, was Chairman until July, 1929, when he was succeeded by Harry H. Wolfe for the ensuing fiscal year. The committee considers that the sound modern city plan is not a piecemeal performance of designing streets, parks, water-works, or a sewerage system. It is a coordinated design which treats each of these as a part of the whole, making sure that each project fits in its proper place. In the words of Frederick Law Olmsted, "This basic idea of city planning is the clear recognition of the fact that no one can accept responsibility for any smallest element in the complex unit that we call the city without participating in the joint, undivided, and complete responsibility for the future excellence or inferiority of the city as a whole."

One of the first acts of the Committee was to petition the Board of Trustees of the Chamber to appoint a Public Playgrounds Committee to consider playground and recreational matters. This committee was appointed.

A Setback Ordinance Adopted

Believing that the major street plan of the city, drawn up in 1924, was in danger of being ignored by contemplated building projects, the Committee urged that such steps as were necessary should be taken to prevent property owners from encroaching on the proposed widths of the major streets. The most effective regulation seemed to be the adoption of a setback ordinance which would compel property owners to keep all future buildings back of the proposed wider street line. A recommendation to this effect was made with the result that a setback ordinance was passed by the City Council.

Recently the Committee invited an engineer from the City Engineering Department to explain a major street-widening project now going on, where an entire row of buildings on one side of a street was moved back fifteen feet in order to widen the street. The tremendous expense of widening streets where the buildings are built up to the property line was very clearly brought out at this meeting, and it strengthened the Committee's insistence that new buildings should be built back of the property line in order to lessen the tremendous expense in future widenings.

Another important recommendation was the Committee's opposition to the construction of a private toll-bridge, except as a last resort, and then only after the city's interests were fully protected. A free bridge or publicly owned toll-bridge was suggested as an alternative. Although a franchise was granted by Congress to private interests, giving them permission to construct and operate a toll-bridge over the Maumee River, the bridge has not yet been built.

Cooperating with the Bureau of the Census, the Committee gathered data for and drew up a map, accurately outlining the Metropolitan District of Toledo, which was later approved and commended by the Census Bureau. It will be used in 1930 for census purposes.

The Committee was unanimous in endorsing the state city planning bill which was drawn up by the Ohio State Conference on City Planning, granting more power to city planning commissions. Although this bill was defeated by the last legislature, prospects seem bright for the approval of at least certain essential features of the bill at the next session of the General Assembly.

Because of the fact that the county officials had no power to own or control park lands, the City and County Planning Committee urged the Probate Judge to appoint a Metropolitan Park Board for the purpose of acquiring park lands outside the city limits and throughout the county. The judge appointed the Park Board, which is expected to start operations during the present year.

For the furtherance of the major highway plan of Lucas County, it was recommended that a study be made of existing conditions along county highways and that attention be called to the limits of the proposed major highways by posting signs along these highways throughout the county. As a result of this recommendation, the County Planning Commission purchased and posted the signs throughout the county.

Grade-Crossing Elimination

After a conference with representatives of the Toledo Terminal Railroad and property holders concerning a grade crossing of an important highway over the railroad, the Committee asked the County Planning Commission to make a survey with a view to determining the feasibility and location of a subway under the railroad. The study was later made by the Plan Commission, which recommended that a grade separation be carried out and that the roads be re-located so that the proper approach might be made. After the Planning Commission's report was made, the Chamber's Committee then approved one of the plans and urged the County Commissioners to carry out the grade-crossing project in the near future so that needless expense may be avoided due to new buildings being erected on the proposed right-of-way of the re-located highway.

A proposal to place four additional railroad tracks across a major highway leading into the city was carefully studied by the Committee, and a recommendation was made that a grade separation be constructed, both for the new tracks and for the three existing tracks. In this matter the Committee was unsuccessful in having its recommendations carried out, apparently because the County Commissioners did not wish to obstruct a major industrial development project, for which the immediate construction of the tracks seemed necessary.

In line with the policy of the Committee to commend forward-looking steps on the part of public officials, the Committee complimented the President of the University of Toledo, a municipal institution, in his effort to acquire additional land to add to the new university campus, upon which new University buildings will be erected this

year. The City Council later approved the purchase of additional acreage, and as a result the University campus will be ample for many years to come.

Educating the Public in City Planning

Believing that the public appreciation of city planning can never be attained until its citizens are educated as to its meaning and value, the Committee recommended the adoption of a city planning course in the public schools and asked that existing planning reports be used in the schools. The Board of Education is now considering the request, and it seems likely instruction along these lines will soon be given in the schools.

In order to keep informed itself, and to give an opportunity to members of the Chamber and citizens of Toledo to hear the latest ideas in city and regional planning, the Committee has from time to time brought in speakers of national reputation. During the year the Committee was fortunate in obtaining Harland Bartholomew, who addressed the Committee and a large group of citizens on the subject of "Citizen Support for City Planning." At the invitation of the Chamber's planning committee, both the City Plan Commission and the County Planning Commission attended this meeting. Another outstanding speaker was Flavel Shurtleff, Executive Secretary of the National Conference on City Planning, who addressed a meeting of the Chamber of Commerce Committee and other citizens, including nearly a score of presidents and other officials of neighborhood and civic organizations who were invited to attend the meeting in an effort to get the various local groups to see the city plan as a whole.

One of the most important things which the Committee did to awaken community consciousness of city planning was its cooperation in obtaining and helping with the program of the Ohio State Conference on City Planning which met in Toledo in October. Nearly all the members of the City and County Planning Committee of the Chamber served as chairmen or members of local committees in charge of arrangements of the conference. The local newspapers gave the conference a great deal of publicity and editorial comment, and a great deal of interest was manifested in the conference. As evidence of this, nearly seven hundred persons attended a civic luncheon at which Shurtleff spoke. A dinner meeting was attended by nearly two hundred persons, nearly all of whom were of Toledo, where William A. Stinchcomb, Director of the Metropolitan Park Board of Cleveland, spoke on the subject of "Metropolitan Parks." Members of the recently appointed Metropolitan Park Board of Toledo were guests of honor on this occasion.

The City and County Planning Committee of the Toledo Chamber of Commerce has endeavored during the year to fulfill its purposes in arousing the interest of the people of Toledo to the necessity of long-time planning, so that some past mistakes may be rectified and future mistakes may be avoided in making the city of Toledo a more convenient, safe and healthful place in which to live. Whatever success the Committee has had in getting the people of the city to view each proposed improvement as a part of the entire city plan has been due to the cooperation between the Chamber of Commerce and public officials and to the support of the Toledo newspapers in giving publicity to city and county planning projects which make possible the greater realization of aims and objects of planning and the economy which results from it.

Prison Outbreaks Show Urgency of Prison Reform

THREE prison outbreaks in one year in New York State have caused thoughtful citziens to wonder what causes can underlie these social eruptions. Conceding that other influences may have played their part, there is a rather general consensus that overcrowding is the principal source of trouble. This means not only congestion and internal friction, but enforced idleness, alternating relaxed and harsh discipline, and inadequate classification as well. The source of the overcrowding itself is to be found in cumulative neglect and the recent lengthening of sentences. In 1929 the prisons of the state were caring for 6,317 inmates as against 3,967 in 1919. During these ten years there has been virtually no enlargement of prison facilities. The Clinton Prison at Dannemora dates back to 1845. Its cells are 5 x 4 feet and many of them narrower. Auburn Prison, one of the oldest in the country, was built in 1816. Some of its cells are as narrow as 3 feet 6 inches. At the time of the first outbreak it was housing 500 more prisoners than its normal capacity. The overflow was being cared for in crowded corridors and dormitories. It seems incredible that a state which has made so much progress in industry and commerce should have made no improvement in its prison facilities or its prison methods in fifty years.

Governor Roosevelt appreciated this situation when he took office last year. He urged the Legislature to do something about it, but it appeared to be a matter that could be put off—and certainly there was ample precedent for putting it off. The lurid light of the Auburn fire has compelled attention. Governor Roosevelt has since submitted a carefully outlined program for the expenditure of $35,000,000 on prisons. New York State, according to these plans, would reconstruct Sing Sing, Auburn and Clinton Prisons and erect two new ones, one at Attica and another somewhere in the southeastern part of the state. This would provide for a prison population of 10,000 by the year 1935. There is also a tentative proposal for road camps and prison farms to care for 500 short-term prisoners. There are further provisions relating to the enlargement of the Institution for Defective Delinquents at Napanoch, the hospitals for insane criminals at Dannemora and Mattewan, and the Women's Reformatories at Bedford Hills and Albion. To this may be added various county and New York City projects which would bring the grand total for prison improvements in New York State to $51,000,000.

One readily obtained result from such a program will be better classification of the inmates of all these institutions. The folly of mixing callow youths with case-hardened recidivists has long been apparent. All authorities agree that classification is an essential of a modern prison system. There is much to be done also in the development of industrial opportunities. Less than 25 per cent of the prison population are now industrially occupied. Adequate and modern shops and buildings are lacking. When one considers the quantities of supplies that the state buys which could readily be manufactured by prison labor, and the extent to which they could thus help to pay for their keep, it seems a great pity that this opportunity should be neglected.

A Problem Not of Crime but of the Criminal

The prison problem is a problem not of crime, but of the criminal. If parole is to be made workable, it must be based upon what happens to an individual's outlook and attitude while in prison. Parole and regeneration are not possible while our jails continue to meet the definition ascribed to Joseph Fishman, former inspector of prisons for the United States Government, and quoted in the report* of the National Crime Commision:

> Jail: An unbelievably filthy institution in which are confined men and women serving sentence for misdemeanors and crimes, and men and women not under sentence who are simply awaiting trial. With few exceptions, having no segregation of the unconvicted from the convicted, the well from the diseased, the youngest and most impressionable from the most degraded and hardened. Usually swarming with bedbugs, roaches, lice, and other vermin, has an odor of disinfectant and filth which is appalling; supports in complete idleness countless thousands of able-bodied men and women, and generally affords ample time and opportunity to assure inmates a complete course in every kind of viciousness and crime. A melting-pot in which the worst elements of the raw material in the criminal world are brought forth blended and turned out in absolute perfection.

New York is likely, with Governor Roosevelt's splendid program, to abandon its place in the rear of the prison reform movement and take a new one in the van.

* See "Jails and Workhouses Breed Crime," in THE AMERICAN CITY for April, 1929, pages 126-128.

Sewer Explosions in Newburgh, N. Y.

Reports of United States Bureau of Mines, Made at the Request of the City Manager, and of the Independence Bureau, Philadelphia, Made for the Central Hudson Gas & Electric Corporation, Vary Widely as to Conclusions

AT about 11:30 A.M. on September 16, 1929, a series of explosions took place in the downtown business section of Newburgh, a city of about 30,000 people on the Hudson River, New York, along the Third Street sewer and its lateral connections One person was killed, a score or more persons were injured, and damage estimated at $200,000 to $300,000 was done to property.

On August 24, 1928, a similar explosion occurred in the same part of the city and along the same sewer. At that time there was no loss of life, and property damage was less. As recommendations had been made after this first explosion and were partly carried out, but an even more disastrous explosion had occurred in the same section within thirteen months, a thorough investigation of all the factors that might contribute to the explosions was warranted.

At the request of the City Manager, the Director of the Bureau of Mines ordered G. W. Jones, explosives chemist, to assist in the investigation of the possible causes of the explosions and recommend a means of preventing a recurrence.

The Investigation

A thorough examination of the sewers and territory adjacent to the area in which the explosions occurred made it quite certain that the explosions started somewhere above Third and Montgomery Streets and traveled downward along the Third Street sewer toward the Hudson River. At Third and Smith Streets the explosion was communicated to the Logan Robinson store. From Third and Smith Streets the explosion passed downward toward the sewer outlet at the river. At Water and Third Streets the explosion extended north and south along Water Street to stores and buildings to the north and south of Third Street. Explosions continued on down the Third Street sewer to the manhole at Third Street at the West Shore Railroad viaduct.

The evidence indicates that only the manhole covers on the Third Street sewer were blown off. The one at Smith and Third Streets was hurled the greatest distance, which was estimated by one witness to be 50 feet. It was broken in three pieces. The manhole cover at Third and Water Streets was blown off with less violence, while that at Third and the West Shore Railroad viaduct was blown only a few feet in the air. No manhole covers on the Water Street laterals were blown off, although the damage to stores was most extensive along this street. A manhole cover of the Central Hudson Gas & Electric Co. was blown off and broken in front of 70 Water Street, although there appears to be no direct connection with the sewer system. The information above was obtained by direct interviews by G. W. Jones and partially by information supplied by W. H. Mabie, City Inspector.

THE STORE ON THE WEST SIDE OF WATER STREET, NEWBURGH, WHERE THE ONE FATALITY OCCURRED

Extent of Damage to Buildings

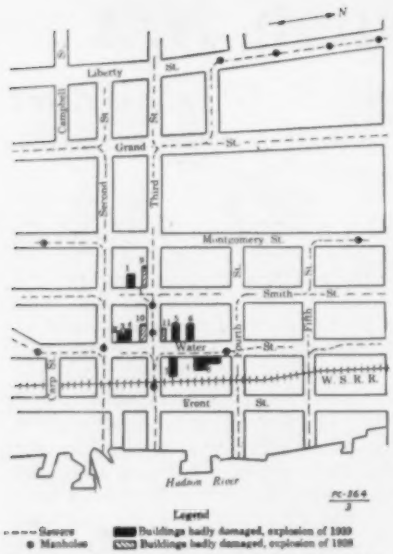
Inspection of the damage to buildings and sewers indicated that the explosions were of a low order of violence. Much greater damage would have resulted had the explosive mixtures been of such a composition as to give the highest development of pressure and highest rate of flame propagation.

With the exception of the Moe Meyer store, in which an extensive fire raged, there was little evidence of smoke or production of sooty deposits in any of the buildings destroyed. In some of the establishments which were more or less completely wrecked, inspection of clothing and other materials showed grayish deposits of dust, but there was practically no evidence of sooty or tarry deposits. Neither was there any appreciable odor of smoke. The basement of the Logan Robinson store showed the greatest evidence of fire, in which a few of the splintered joists had been charred on the edges. A few small fires were started in some of the basements along Water Street. A momentary flame of any kind coming in contact with paper or loose combustible material would cause the fire. In some of the stores mentioned which were wrecked by the explosion, paper, cardboard and light wooden boxes of every description were thrown in large heaps into the wreckage, yet in none except the Moe Meyer store did extensive fires develop.

Prevalence of Odors Determined by Questionnaire

A questionnaire was prepared by Mr. Jones and delivered by the police and other municipal authorities to all business places and residences adjoining the Third Street sewer system. In reply to the question, "Have you been troubled with odors within the last three months?" 248 replied "no" and 111 replied "yes." The survey showed that more than 30 per cent of the business establishments and residences had been bothered with odors.

To the question, "What did it smell like?" the following replies were received: illuminating gas and gas, 53; gasoline, 24; gasoline and illuminating gas, 8; gasoline and sewer gas, 3; sewer



SECTION OF NEWBURGH WHERE EXPLOSION OCCURRED, SHOWING SEWERS, MANHOLES, AND EFFECT ON BUILDINGS BY TWO EXPLOSIONS

and illuminating gas, 2; sewer gas, 8; and miscellaneous, 13.

The conclusions drawn from this questionnaire survey were: (1) that complaints were general over a wide area and not concentrated in one particular locality along the Third Street sewer system; (2) that the time when these odors were most noticeable was in the forenoon, many of them around noontime; (3) that in many places the odors were most marked during damp and foggy days, after thaws, and the like; (4) that there was a wide variation of opinion as to the cause of the odors, although the greatest number of replies were that the odors were from illuminating gas.

Effect of Atmospheric Pressure on Prevalence of Odors

Stormy weather and damp and foggy days occur simultaneously with a falling barometer. The fact that the odors were most prevalent in the morning and until about noon also agrees with the fact that under normal weather conditions the barometer falls during the morning period, as was shown conclusively by the investigation, which gave further clues for the investigation of causes of odors in the different districts of the Third Street sewer system.

It was impossible to obtain reports of weather prevalent in Newburgh before, during and after the explosion. Records were therefore obtained at the radio station at West Point about 10 miles south of Newburgh. These should be comparable to conditions in Newburgh. The records show that, beginning at about 11 P.M., September 14, the barometric pressure began to rise and continued to rise without any drop until around 9 A.M. on the day of the explosion, a very unusual condition. From this time the pressure began to fall and continued to fall for the next 21 hours. Under normal conditions, the records showed that the barometric pressure usually falls during the period from 9 A.M. to 12 each day.

The records at West Point show that at 11 A.M. on September 16 the relative humidity was 88 per cent; at 12 it was 90 per cent. The temperature at 11 A. M. was 70 degrees Fahrenheit, and at 12 it had risen to 85.

High Tide in River Submerged Sewer Outlet

The series of explosions occurred at a time when the highest tide was approaching, similar to the conditions which were present at the first explosion on August 24, 1928.

The outlet of the Third Street sewer was submerged at all times. Before the arrival of the investigator for the U. S. Bureau of Mines, a hole had been cut in the crown of the Third Street sewer near Front Street to act as a vent, and all manhole covers had been removed from the Third Street sewer and connecting laterals to offer better facilities for ventilation. A relief sewer was built at the order of the Council to be above high tide at all times and serve as a ventilator for the Third Street sewer system.

Survey to Determine Possible Source of Inflammable Liquids

A survey was made by the city of all the dry cleaning establishments, garages and service stations in Newburgh which might use gasoline and similar products. The survey showed 93 establishments which sold gasoline and similar products in miscellaneous containers and smaller than 5-gallon lots for household purposes, to the amount of 754½ gallons during the month ending September 21.

Periodic inspections of the Third Street sewer made by the city and by Mr. Jones failed to show any deposits of combustible liquids lighter than water, such as gasoline, kerosene and naphtha, at the submerged outlet. A curtain was placed over the outlet of the South William Street sewer, the system in which are most of the garages and service stations, and after two days it showed only a few patches of scum of a combustible nature.

Test of Gasoline

A test of some of the gasoline used at one establishment on Smith Street showed that at the prevailing sewer temperatures, 48 to 62 degrees Fahrenheit, this gasoline had sufficient vapor pressure to produce explosive mixtures when mixed with the proper amount of air. Explosibility tests with this material showed that it required four times the theoretical amount of the gasoline to render the mixture with air explosive. This was due to the large amount of heavy constituents in the gasoline which had a very low vapor pressure.

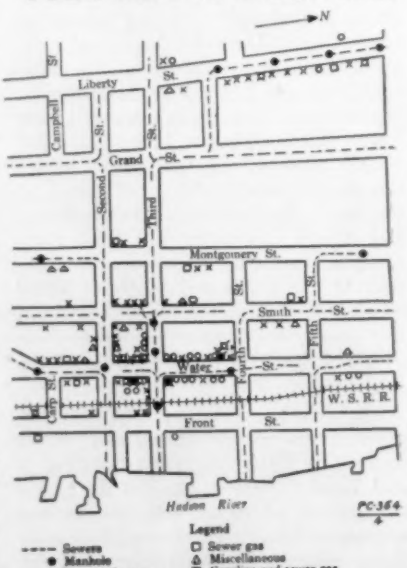
Gases or Vapors Along the Third Street Sewer System

The Third Street sewer, which is of brick and approximately 3 feet in diameter from Montgomery Street to the river, passes down a steep grade to the river through the section in which the explosions occurred. The rate of sewage flow is much higher than in most sewer systems. The sewage, having a density equal to or greater than water, should be quickly carried out into the river before being appreciably attacked by bacteria or other agent. For this reason, there appears to be no possibility of true sewer gas having taken a major part in this explosion.

Because the explosion was most violent at Third and Smith Streets and started somewhere in this vicinity, a close survey was started in this section for combustible gases or vapors. Tests were made at night after most of the automobiles were off the streets, because the odor of automobile exhaust in some instances may resemble that of illuminating gas.

A vault in the basement of the building at 48 Smith Street, which extends under the street beyond the curb line, and diagonally across from the Logan Robinson store, was investigated. Gas that was coming into this vault from the street was violently explosive, when tested in the explosibility apparatus. Explosive mixtures of gas and air were found to be coming into the vault on two successive nights.

Further tests made in Smith Street



SECTION OF NEWBURGH WHERE EXPLOSION OCCURRED, SHOWING WHERE ODORS WERE REPORTED IN ANSWER TO THE QUESTIONNAIRE

south of Third Street gave marked odors of illuminating gas, although none in proportions sufficient to be detectable in the explosibility apparatus used. That is, it had less than one-fourth the amount of illuminating gas necessary to render the mixture explosive.

Drill holes made in Smith Street about 20 feet north of the Third Street sewer showed gas coming from the ground. When lighted, this gas would burn steadily for a minute or more. Other drill holes made into the ground through the cobble pavement in this vicinity gave strong odors of illuminating gas.

On notice to the Central Hudson Gas & Electric Co., the pipes leading south on Smith Street and Third to Second Streets were uncovered. When this gas main was uncovered, it was found that, to avoid running the main around the vault mentioned above, it had been raised and passed over the vault. It is reported that four leaks were found in this main, two very close to the vault where the explosive mixtures were detected.

Illuminating gas was detected in a Central Hudson Gas & Electric Co. manhole at Third and Grand Streets. Gas had leaked into this manhole in such quantities that the gas-air mixture in the manhole was almost explosive, as shown by the apparatus used. The Central Hudson Gas & Electric Co. was notified and had the gas mains uncovered near the manhole mentioned. It is reported that the 2-inch wrought iron main had entirely rusted through in one place. The gas main runs parallel to the Third Street sewer and rather close to it.

Possible Means of Ignition

In the first place, no information was obtainable as to how the explosive mixtures that caused the series of explosions were ignited. However, the possible sources of ignition are numerous. The explosions may have been caused by one of the following means:

Direct Ignition.—By the dropping of a lighted cigarette, cigar or burning match through a manhole cover opening; by sparks or flames from the exhaust of an automobile passing over a manhole cover; by sparks caused by tools used by workmen in removing manhole covers or making repairs in the sewer; or by open flames taken into the sewer by workmen, under which are included open lights, gasoline torches and cigar lighters, etc.

Indirect Ignition.—Through sewer laterals leading to the basements of buildings or residences or through openings leading to underground electric systems. Sources of ignition coming under this heading would include open flames, such as stoves, furnaces, boilers, hot water heaters, or gas jets; sparks from electrical equipment, such as switches, motors or other electrical devices; arcs due to the grounding or short-circuiting of electric light, power or telephone cables in street ducts or manholes.

ANOTHER SECTION OF WATER STREET, SHOWING APPARATUS SUBDUING THE FIRE AFTER THE EXPLOSION

The evidence shows that the explosion started somewhere above Third and Montgomery Streets, perhaps as far as Liberty Street, and traveled downward along the Third Street sewer, which was the means, in conjunction with the old stone drains, by which flames or explosions were communicated from one section of the city to the other.

Effect of Fall and Rise of Atmospheric Pressure on Release of Gas Odors

Important information obtained from the questionnaires was that the odors in most cases were periodic and varied from time to time. Closer inspection and comparison with the barometric pressure in the Newburgh district showed that the times when these odors were most noticeable agreed well with the falling of the barometer. Normally, the barometric records show that during the morning, somewhat before noon each day, the barometer falls, and it is during this period that the greatest number of complaints of odors were noticed. Also, during foggy and stormy weather the odors were most noticeable. This also corresponds with the falling of the barometer. In addition to the sewer system, old drains and manholes, there may be other crevices and cavities in this section of Newburgh which are at present unknown. All these openings act as storage reservoirs for gases and, as most of the streets in the Third Street sewer district are paved, any gases in this district liberated under the pavement will follow the path of least resistance and will eventually find their way into these cavities, sewers, manholes and sub-cellars adjoining the streets where such combustible gases are evolved.

A slow accumulation of gases appears to have been going on for an extensive period, as evidenced by replies to the questionnaire and also because there was practically no ventilation in the Third Street sewer.

Under normal weather conditions prior to the explosion, the leakage of combustibles from these underground spaces to the outside air appears to have been sufficient to keep the mixtures below the explosive point. Immediately preceding the explosion, and starting on September 14 at about 11 P.M., the barometer continued to rise until some time on the morning of the explosion. This increase of barometric pressure appeared to be just sufficient to arrest the normal escape of combustibles, thus causing a concentration of combustibles in these underground spaces. This was further augmented, perhaps, by the rising tide. When the barometric pressure dropped just before the explosion, these gases were released rather suddenly, as is evidenced by the many complaints of odor during the few hours preceding the explosion. The explosive mixture became ignited in some unknown manner. The explosion sent pressure waves in every direction in the sewer system and other connecting openings. Sometimes these pressure waves forced the explosive mix-

tures into the basements and cellars, which later exploded and sometimes communicated flame into explosive mixtures which had accumulated in the air spaces under floors and other such places.

Influence of Inflammable Liquids

No evidence was obtained to indicate that appreciable amounts of gasoline and similar inflammable liquids had found their way into the Third Street sewer either before or after the explosion, other than in the replies to the questionnaire. Had gasoline been the major cause of the explosions, accumulations of concentrated vapor should have been present at the lower end of the Third Street sewer, and evidence shows this not to be the case.

Heavy oils and the like which might be washed into the sewer surely played no major part in these explosions. None of these have sufficient vapor pressures at the sewer temperatures observed during the investigations to produce an explosive mixture with air. Likewise, naphtha and kerosene liquids may be ruled out as the sole factor contributing to these explosions, unless the sewer temperatures were higher on September 16 than found on later investigation. The usual grade of kerosene must be heated to about 100 degrees Fahrenheit before it liberates sufficient vapor to give a flash when an open light is brought over its surface.

U. S. Bureau of Mines Reports Illuminating Gas as the Probable Cause

A sufficient number of leaks of illuminating gas were found in the explosion area to account for the combustibles which were present in these explosions, and it is believed that the evidence points largely to illuminating gas as the combustible substance that caused the explosions on September 16, 1929.

Recommendations for Prevention of Recurrence of Explosions

The U. S. Bureau of Mines experts recommended (1) the elimination of gas leaks; (2) an ordinance to prohibit the disposal of combustible liquids in the sewer and the provision of a place for the disposal of waste inflammable liquids at a safe distance from the business district; (3) that the sale of inflammable liquids in small amounts to household users should be prohibited, inasmuch as these people are tempted to dispose of them by pouring them down the sewer; (4) the stone drains in Newburgh should be replaced, as they have offered an easy path and pocket for escaping combustible gases and vapors; (5) an examination of the Third Street sewer is necessary to determine whether the excessive inside pressure caused by the explosions has damaged the sewer to any extent; (6) all sewer connections should be inspected to insure their tightness and to make certain that proper vents and traps have been provided in accordance with the plumbing code of the city of Newburgh; (7) the entire Third Street sewer system, as well as all other sewer systems of Newburgh, should be amply ventilated; (8) complaints of odors anywhere in Newburgh should be investigated promptly to prevent the possibility of a recurrence of the explosive conditions; (9) the sewer should be inspected systematically at least once a month to ascertain whether combustible gases or vapors are accumulating; (10) all basement walls and masonry partitions dividing properties and cellar floors should be made as gas-tight as possible by filling all cracks and openings with cement or other suitable material.

The Report to the Central Hudson Gas and Electric Corporation

The report of the Independence Bureau, Philadelphia, Pa., a private organization employed by the Central Hudson Gas & Electric Corporation, reports the causes of the explosion as not due to illuminating gas, but rather to accumulations of gasoline vapor and other heavy gases. They summarize the causes as follows:

a. The Third Street sewer was effectively sealed by the high tide.

b. Gasoline vapor and/or other heavy gases had accumulated in the Third Street sewer and its branches and were unable to escape, because the end of the sewer was sealed. This accumulation apparently took place over a reasonable period of time, judging from complaints received on the forenoon of the day of the explosions.

c. The mixture of vapors and air was ignited in a manner which it has not been possible to establish definitely.

d. The leaner mixture of gases in the upper part of the Third Street sewer exploded with violence, damaging the Smith Street manhole, cracking the sewer and apparently producing breaks in pavement between Smith and Water Streets. The Smith Street manhole cover was blown high into the air and broke into three pieces. Flame issued from the manhole but produced little smoke.

e. The heavier gasoline vapors, seeking the lower levels, produced a richer mixture. The manhole cover at Third and Water Streets was blown up, and from this, yellow flame several times shot into the air and burned like a gasoline blow-torch. The manhole under the West Shore Railroad viaduct also blew off its cover and vented black smoke, which always follows incomplete combustion of a rich mixture of gasoline vapor.

f. From the branches leading into the main sewer, the fire spread into various basements, through improper sewer connections or defective old stone drains or porous walls. Leakages from defective branch sewers may have seeped through the ground and penetrated old walls. Fire could conceivably follow such channels. The richer the mixture of gas, the slower the speed of travel of flame through a pipe or other passage. Under the conditions, perceptible time could be required for flame to reach and ignite vapors in basements, and this could account for the Moe Meyer explosion coming some time after the others.

g. In all cases where explosions occurred in buildings, it is a safe assumption that a vapor and air mixture had accumulated in basements or under the wooden floors which exist in the three buildings affected and that this mixture was ignited through the connections to the sewer system or through other openings in the basement walls.

h. The violence of the explosion in each building depended on the proportions of vapor and air (the explosive range of gasoline mixed with air is usually stated to be from 2 to 8 per cent), the amount of the mixture, the size of the basement, the structural features of the buildings, etc.

Summary of Independence Bureau Recommendations

The Independence Bureau made four recommendations to prevent the recurrence of explosions in the sewer system of Newburgh as follows:

a. Keep inflammable liquids out of sewers.

b. Protect individual buildings against the sewer system.

c. Make the sewer system tight.

d. Arrange the sewers so that vapors cannot pocket at the lower end.

Who Killed Good Government?

"I," ADMITTED the busy man. "I said I hadn't time to attend to civic duties. I did not vote."

"I," regretted the thoughtless woman. "I let the rainy election day keep me from the polls. I did not vote."

"I," bewailed the lazy. "I declared I wasn't interested in politics, and I never used my ballot. I did not vote."

"I," cried the pessimist. "I excused myself from my duties as a citizen by saying that all candidates are bad and it wasn't any use to vote. I did not vote."

"I," confessed the delinquent voter. "I was a 'rocking chair patriot,' and quieted my conscience by telling it that the election would go all right without my help. I did not vote."

—*The Pilgrim*, League of Women Voters; quoted by The Civic Club of Philadelphia in its bulletin, November, 1929.

PICTURES AND PARAGRAPHS FROM NEAR AND FAR

A MAGNIFICENT NEW EDIFICE IN NEW ORLEANS

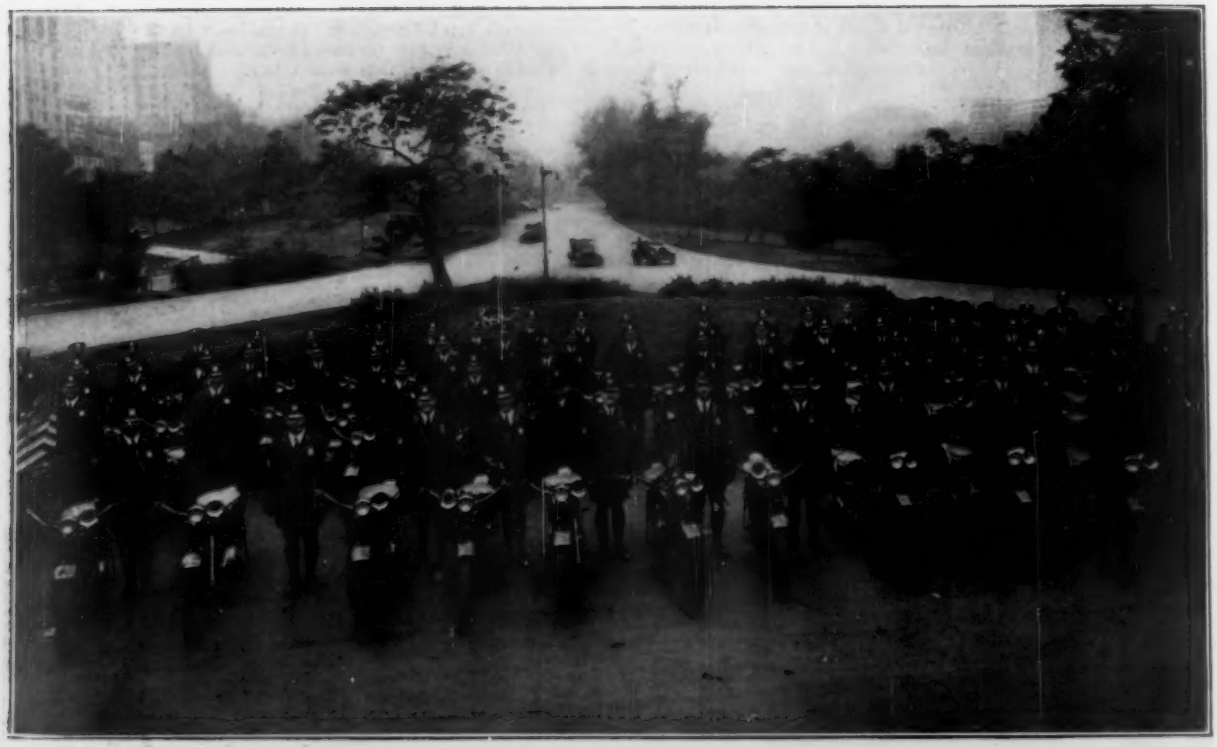
On the site of the old House of Detention at Tulane Avenue and South Broad Street, New Orleans, La., rises this new Criminal Courts Building and Jail. Complete cooling and ventilation systems are among the modern facilities of the jail system, the entire interior of which, for sanitary reasons, is in white enamel

CLEARING WRECKAGE AFTER A BIG BUSINESS-DISTRICT FIRE

While the embers were still hot, Caterpillar tractors Sixty and Thirty were at work untangling débris, going where nothing else could go, and facilitating quick recovery of the bodies of two firemen imprisoned under tons of falling wreckage in this Peoria, Ill., fire, aftermath of which is shown above

THE DEARBORN, MICH., FIRE-ALARM STATION

The room shown to the right has been provided in the new fire-alarm central station at Dearborn, especially for a police signaling central office. Gamewell equipment is used, including a Type "B" central office desk



A GROUP OF NEW YORK POLICE OFFICERS AND THEIR INDIAN MOTORCYCLES

According to the most recent semi-annual report of Commissioner Grover Whalen, of the New York City Police Department, there are now in use in the Department 329 motorcycles. In addition, there are 21 armored motorcycles, and 15 motorcycles equipped with sidecars. One hundred new regular motorcycles were reported to have been purchased during the half-year period; and 39 were reported to have been condemned. Ten new armored cars were purchased, as were the entire group of 15 motorcycles with side cars

Photo from Westinghouse Electric and Manufacturing Co.

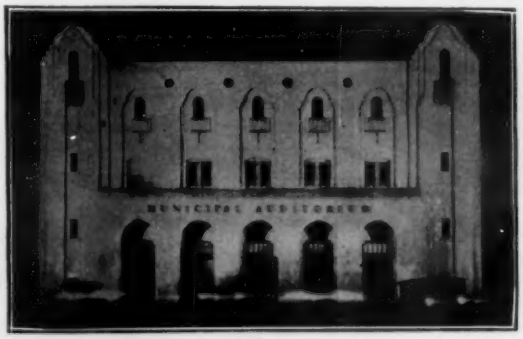
These Cities Point with Pride To These Buildings

THE COUNTY COURT HOUSE, SANTA BARBARA, CALIF.

This elaborately developed Spanish Mission structure (below) was completed recently at a cost of $1,500,000. The remarkable night lighting effect, as illustrated, has been achieved by use of projectors concealed in the surrounding shrubbery. It is interesting to note that three different types of night lighting have been used for the three buildings of which night views are shown on this page

THE "MOONLIGHTED" ART MUSEUM AT CLEVELAND

The classic exterior of the Cleveland Museum of Fine Arts, and its formal "Fine Arts Garden" forecourt take on new beauty under the new floodlighting. The illumination has been gaged to an intensity but a trifle greater than the light of a bright full moon



THE MUNICIPAL AUDITORIUM AT HARLINGEN, TEXAS

This is a fine new public building with seating capacity of 4,000, in a town of 10,000. The flood-lamps may be seen in the picture

Photo from General Electric Co.

THE LYNBROOK, L. I., PUBLIC LIBRARY BUILDING

Hugh Tallant, of New York City, is the architect of what Lynbrook citizens believe to be the best and most beautiful library of its size in New York State. The village has appropriated $92,500 for building, equipment, and land, and part of the land has been given

A PRIZE-WINNING BRIDGE AT PITTSBURGH

Officials of Allegheny County, Pa., recently arranged a public celebration in honor of the completion of the Sixth Street Bridge, in Pittsburgh. At that time, a bronze tablet, awarded by the American Institute of Steel Construction to the most beautiful bridge built during 1929, was unveiled

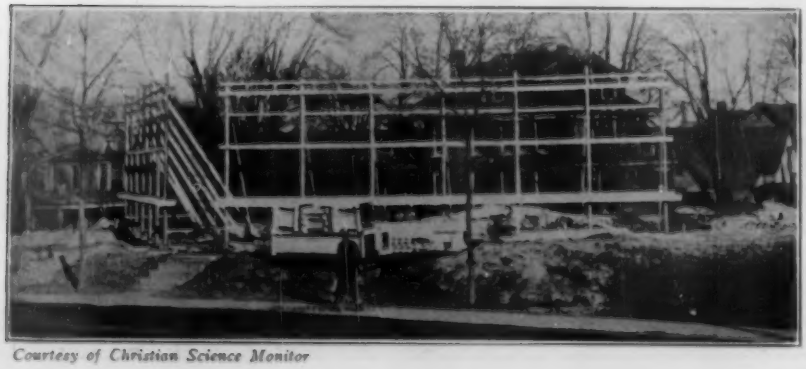
A PLAN FOR NEW YORK CITY'S FRONT DOOR

The Regional Plan of New York has presented for public consideration a monumental scheme for the treatment of Battery Park, a plan by Eric Gugler, architect, as illustrated above. It calls for a memorial shaft 800 feet high, set in a paved court of honor flanked by armillary spheres 80 feet in diameter

WHERE A POLICY OF DESTRUCTION IS JUSTIFIED

Volunteers working with the Westchester County (N. Y.) Conservation Association removed and made bonfires of over 15,000 signs from highway rights-of-way. A one-tree harvest of them is shown (right). Having done this, it has begun a far-reaching constructive program

(Below) Billboards illegally erected in Kansas City, Mo. These disappeared overnight after public authorities discovered them



Courtesy of Christian Science Monitor

Removing—or Preventing—the Accumulation of Snow on City Streets?

New Methods of Melting Snowflakes as They Fall

By HOWARD T. BARNES
PROFESSOR OF PHYSICS, MCGILL UNIVERSITY, MONTREAL

IN all large cities the problem of disposal of snow is becoming more and more important. Interference with traffic, and consequent delays, must be reduced to a minimum. Snow removal is an emergency job of the greatest importance in crowded thoroughfares. The slightest delay on the main arteries of traffic results in serious congestion which is too costly to business interests and the general public.

The problem confronting city officials depends upon several factors, the principal of which are: traffic density; importance of the streets to be handled; the equipment and forces with which the work is to be done; the money available; the method of procedure to obtain the best results; and public cooperation.

In a city such as New York, where the density of population is very great, where traffic is congested, and millions of people have to be transported at least twice a day, the snow problem is a serious one. As in all emergency conditions, concentrated action must be maintained by large forces, hastily gathered together for short periods of time.

Speed is the essential factor in snow removal, and traffic constantly interferes with the work. Also the temporary paralysis of traffic caused by snowbound vehicles creates a grave fire hazard.

Development of Equipment

Equipment used exclusively for snow removal has been developed to a great degree of efficiency within the past five years. In some cities this equipment is recommended only when it can be shown that labor is not available or dependable, or when the demands of the public make it imperative. Modern equipment plays an important part in the economical removal of snow. Long hauls reduce the loading time, hence disposal through sewer manholes is utilized as much as possible. The construction of special snow holes at convenient locations has relieved the situation somewhat, owing to the great capacity of the sewers and to the fact that the work may be accelerated by a flow of water from a neighboring main.

Where to Put the Snow

The dumping of snow upon vacant lands, in ravines or on park areas is found necessary at times, although it creates the objectionable features of an unsightly dump until late in the spring before the last of the snow disappears. Areas of open ground used for dumps should be far away from habitations. Where waterfront dumping is available, it may be used to advantage if the haul is not too long.

Snow-removal work is financed usually by general taxation and is included in the department's annual appropriation. Whether or not the city removes the snow from the sidewalks in front of private properties is a matter for local decision.

Fight With, Not After, the Storm

The most effective way to fight a snowstorm is to work with the storm. By this method the snow does not become packed too firmly to be easily plowed and removed without blocking traffic.

On street-car lines, the transportation companies operate snowplows, followed by rotary-broom sweepers equipped with steel blades mounted upon swinging arms which push the snow eight to ten feet away, forming a windrow. The congestion of motor vehicles caused by this method of clearing is its greatest disadvantage.

The success of snow-removal work in any municipality depends upon cooperation with the general public. The employees of the department who are in contact with the public should be uniformed. To secure public cooperation should be one of the principal endeavors of every employee of the department, without any thought of placing the responsibility elsewhere than upon the municipality. By proper use of advertising, the public may be instructed to cooperate in such a manner that the expense may be lightened considerably.

The purpose of modern snow-fighting machinery is a serious item for many small cities and towns, and in the larger cities it is impossible to utilize this equipment for more than a few weeks, or perhaps a few days in each season.

Recent Experiments

In an effort to improve snow disposal many fantastic schemes have been proposed in the past. It is not the purpose of this paper to criticize the methods which have been suggested with all seriousness of purpose, and so a mere mention of this matter will suffice.

Various experiments have been made in melting snow in place by steam. These methods are purely mechanical, and where such heat is employed they are too costly and not effective for quickly taking care of snow and ice. Quite recently considerable advances have been made in a pure heat melting scheme, using a low-temperature source, and the cost has been reduced to about 40 cents a ton of freshly fallen snow. Objections are found to this method of melting, however, owing to the distribution of the melting plant, which still requires the use of ordinary snow machinery and trucking.

Heat applied directly to the snow on the roads cannot be economically done, and, moreover, it leaves the problem of traffic congestion just where it was.

Heating materials such as thermit, or calcium carbide, cannot be adapted to a city street. There has been much discussion with me on this point, and a good deal of misapprehension has arisen over the fact that at this time of writing these materials cannot be safely adapted.

Of chemicals used for melting snow, common salt or sodium chloride is often resorted to, although not in favor for general use. Salt is slow in its action and ceases to melt in the neighborhood of zero Fahrenheit. There has always been the question of the effect of the corrosive action of salt upon materials.

Various Chemical Methods

For some time past, in the development of the science of ice engineering, I have been using a number of chemicals for destroying ice. As a result of this development, there are several ways in which large quantities of ice may be speedily disintegrated and snow readily melted. But some of these cannot be applied in a congested thoroughfare. What will be perfectly satisfactory and convenient to use out in a field or in a lake or river, or in opening a channel for navigation, could not be used in a city.

Metallic calcium is a remarkably efficient ice melter, but its present cost is prohibitive. Some of the hydrocarbons are snow melters, but their inflammable qualities render them unsuitable for use in city streets.

Among the chemicals which I was the

first to adapt for destroying ice, I would place calcium chloride as the most important. I have used it on very large scale for ice destruction and have found it several times more rapid than salt and an efficient melter down to a very low temperature below zero Fahrenheit. No other chemical obtainable at a reasonable price is as effective as calcium chloride for chemical melting.

About three years ago calcium chloride was first applied to city streets by one of the large chemical manufacturing companies. From my own experience, I would not advocate, except in rare cases, the use of raw calcium chloride in city streets, especially around electric switches or under electric trams.

The Latest Methods

Taking into consideration the difficulties which confront a municipality, the problem of snow removal seems worthy of the best scientific study. For this reason, as a part of the general development of the science of ice engineering, I have begun a careful investigation, through the Ice Research Institute at Morrisburg, Ont., and Waddington, N. Y., of the whole problem of snow disposal.

We began experiments this year on a large scale in the borough of Queens, New York City, and these were further carried out in the borough of Manhattan. Similar experiments were made in Philadelphia and in Hartford, Conn. Much new and useful information has been obtained, and new compounds have been developed. The extraordinary interest displayed in these experiments all over the country justifies us in continuing them along the best lines.

An entirely new method of treating snow was aimed at, and the ideal which I had in mind was to melt the snow as it falls and prevent it from accumulating on the streets. In the ordinary operation of snow machinery, the plowing and hauling is done after the snow has accumulated, and, in spite of all the efforts of the plows, a layer of icy and compressed snow remains on the pavement, causing an exceedingly dangerous and slippery condition in which even chains are useless. It was to prevent just such a condition that the new methods were devised.

Spraying Pavement Before a Storm

The first experiments were directed towards using a treated solution of calcium chloride rendered non-corrosive, spraying it slightly over the pavement just prior to the storm. This method met with unexpected success, inasmuch as the snow refused to remain on the treated pavements at any time during the storm. It was surprising to find how small an amount of calcium chloride solution was required in this road sprinkling. Solutions from between 20 and 25 per cent of chloride were prepared, and, as a precaution against any disagreeable consequences of this, other chemicals were added which had been found to improve the dressing and render the material non-corrosive. We did not have to clear away a disagreeable accumulation of slush in the streets, which had been a result of the old method of sprinkling salt over the snow. In following the spreading machine, the raw material had been removed by flushing the street with fresh water. In cold weather, however, the flushing water would freeze again, causing a very disagreeable and dangerous icy condition. By the new method of lightly sprinkling the pavement just as the storm starts, or prior to the fall, the snowflakes melt as they strike the ground, and it is astonishing to see how effective this method is.

To anyone, however, who has dealt with the disposing of snow or melting of ice on a great scale, it is not surprising at all. Masses of snow or ice are exceedingly bad conductors and are exceedingly difficult to penetrate and remove. The copious sprinkling of calcium chloride grains on such a mass merely results in a series of holes melted through the mass, and a consequent lowering of temperature in the interior, with harder freezing. Such masses when pressed down become disagreeable slush, to be spattered about on vehicles.

The method which I have been developing, when correctly used, evenly, on layers of snow will cause the snow to melt uniformly. The high-pressure spray which carries the solution from the flushing tank beats down the snow and ice very much as a warm rain beats down the snow surface in the spring. When correctly used, therefore, this new method will result in no snow or ice on the streets, in a minimum of congestion, in no large investment in complicated or intricate machinery, and, above all, in safety of travel with no skidding.

Experiments Still Under Way

These advantages are so great that it is evident the method will be of enormous value to our big cities. At the same time it must be considered, and, therefore, I am making a special investigation in cooperation with the tramway companies and telephone engineers and railway companies to determine something in the nature of a snow-melting compound that will be acceptable to all. Until this is done, the promiscuous use of any of my compounds will not be permitted.

No doubt readers of THE AMERICAN CITY will desire information about the cost, and the amount of snow melted for a given quantity of solution. Up to the present time my figures have been more or less general, but I may say that the cost will be almost negative compared to that of the older method of snow disposal. My reason for not giving the figures at the present time is that we have recently made some valuable discoveries regarding new material. It has been found that one application of our solution has resulted in a minimum of snow accumulation on a hill for a period of three weeks. The new method also prevents an icy condition from remaining on the road, and should be of particular value for our highways.

Alabama's New Municipal League Gets Busy

THE Alabama League of Municipalities, which was evolved last year from the former Association of Mayors and City Commissioners, has further broadened the scope of its operations by including among its objectives a greater material prosperity for the entire state. This declaration made by Mayor Harry T. Hartwell, of Mobile, who continues as president of the organization, has met with expressions of general approval from member towns and cities. Eighty-one of Alabama's cities and more progressive towns are now represented in the League.

Practical plans for the better advertisement of Alabama, the extension of markets for its products and for improvement of its highways and waterways will be worked out and carried forward as soon as the municipal legislative program can be formulated and enacted.

The League's legislative program will be directed also toward uniform municipal organization and the adoption of a municipal code, which it now has under discussion. Many Alabama cities are governed under special acts masquerading as general laws. These acts referring to cities of a given population, "as shown by the latest Federal census, or any subsequent Federal census," are likely to prove embarrassing when the 1930 census returns are in. Mobile, for instance, may awaken some morning to discover that it has grown into Birmingham's classification; or Montgomery may find itself in Mobile's corporate status. In the state's code the chapter on Municipalities has been so often amended and reamended that many cities operating under it scarcely know "where they are at."

Some uniform system for equalizing municipal tax assessments is also to be recommended. President Hartwell calls attention to the fact that more than nine million dollars of "escapes" have been added to Mobile's lists within the past two years and suggests that many other Alabama cities are suffering from similar laxity.

DAVID HOLT.

Public Markets as a Problem of the Farmer and His City Cousin

Modern Wholesale Regional Markets Advocated by Mayors' Conference Committee

BOTH the farmer and the city dweller are periodically disturbed by the spread that takes place between what the farmer gets for his products and what the latter pays for them. Undoubtedly much of this increase is attributable to actual services which the consumer expects or demands. He—or more likely it is Mrs. Consumer—has fallen, let us say, into the telephone habit. She must expect to pay the cost of having a boy deliver her order to the door. She wants only the choicest and she wants it wrapped and brought to her. These services must add to the cost, but even taking these into account there is a puzzling expansion in the price from the time goods leave the farmer's hands until they are placed in the hands of the consumer.

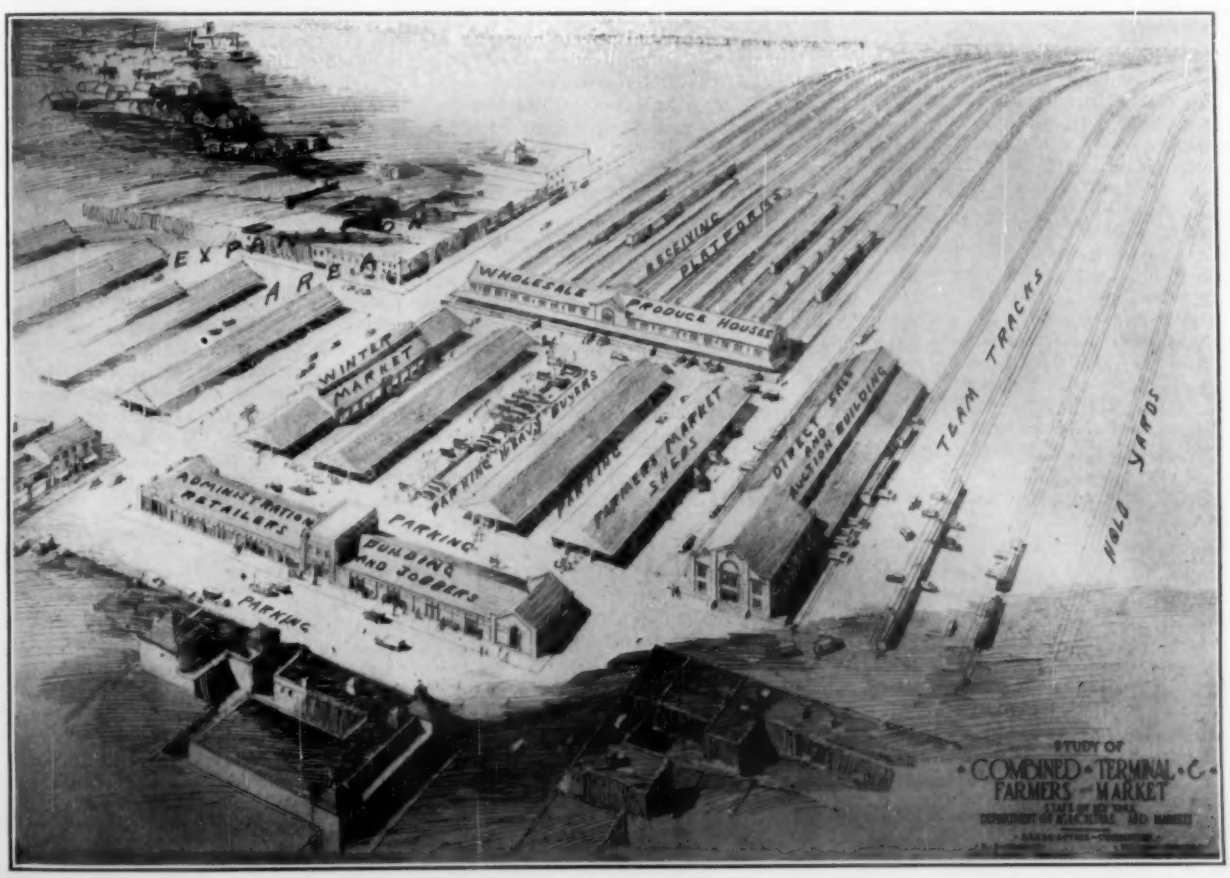
At the request of Governor Roosevelt, the New York State Conference of Mayors and Other Municipal Officials has just completed a study of the markets in the cities of that state. The situation which the report of the Conference Committee discloses and the carefully thought out recommendations that it submits are worthy of the attention of those interested in the problems of city as well as rural life.

The committee finds that the municipal markets of New York State are too small and ill-arranged for their present burdens. All of them antedate the motor age. They belong to a time when a market place was maintained for farmers to permit them to sell directly to the housewives of the community. Retail transactions in a public market are no longer of any real significance in sizable cities. The markets are too remote from the majority of housewives and the modern farmer can make better use of his time than by turning huckster.

The Function of Regional Markets

The benefits of modern regional markets lie not so much in their ability to bring about direct dealing between producer and consumer, as in their ability to expedite the movement of farm produce between producer and consumer and cheapen the handling and marketing costs for the producer, the wholesaler, the jobber, and the retailer. The motor truck has developed the local market place into a market center for a large region. The markets at Albany, Syracuse or Buffalo serve a territory extending in every direction. Cities with good rail service soon become the focus of market activities reaching fifty miles or more in every direction.

The old public market areas are not only small and badly congested; they are not located with any reference to the freight lines that bring them so much of their produce or to the state highways over which the farmers bring their goods. Frequently they are found close to the business center, hampering the latter's growth and without room for expansion itself. Produce has to be trucked to it from the railroad, perhaps through the business center, and trucked again through the same center to the residential areas of the city. Rents are high, space is scarce, traffic is choked until it is almost at a standstill and a great deal of unnecessary and expensive



handling must take place. All of these factors add prodigiously to the consumer's bill. The farmer finds the market almost inaccessible, parking space difficult to find, and the whole situation so difficult and time-consuming that he is readily discouraged with it. Frequently rail-borne fruits and vegetables from a thousand or three thousand miles away displace riper and fresher locally grown produce because the farmers will not subject themselves to the delays and frustrations of the typical city market. As the Committee puts it:

"The motor truck and modern highway have opened up new possibilities in the way of access to market for produce from New York farms. The agriculture of the state is not deriving the full benefits from these highways and from location near markets because the regional market facilities are inadequate. If better market facilities were provided, a larger supply of fresh produce would be available for consumers; new outlets would be provided where now lacking, and existing ones improved; and handling facilities would be bettered. These changes would result in lower prices to consumers, increased opportunity to dispose of produce, and improved profits to farmers.

The Committee proceeded to set up specific criteria for the development of an adequate regional market. These standards may be epitomized as:

Joint freight yard with direct rail connections
Accessibility to the majority of farmers using it at the peak of the produce season.
Minimum interference by and with the other traffic of the locality
Room for expansion, including extension of terminal facilities
Space for allied lines of trade
Minimum interference with present residential zones
A site the cost of which will not require prohibitive rentals to make it self-sustaining

It is admitted that a location combining all these desirable features would be uniquely fortunate. But it is possible to secure a substantial number of them. The accompanying diagram indicates the way in which the Committee would propose to lay out such a regional market. It would consist of two parts—a farmers' section for the handling of locally grown produce and a rail and water section for goods shipped in from distant points or locally-grown produce being assembled for shipment out. The wide streets on all sides of the farmers' section are designed to facilitate circulation of traffic throughout the market.

The Committee is emphatic in recommending that the market be publicly owned. Farmers, wholesalers, retailers, and railroads have an interest in it and it is important that such a market should not be controlled by any one interest. The best methods appear to be to have the ownership by the state, or shared by the state with the city or county or both. The present law requiring the state to pay one-half of the cost of city markets has not proved adequate to safeguard the state's interest or encourage regional development and operation. A modern regional market should combine a farmers' market with a wholesale market for shipped-in produce, and should have connections with as many railroads as possible, so as to save the heavy expense of trucking produce from the railroad to the wholesale establishment and save the unnecessary congestion involved in this wasteful process. Such a regional market may be expected to pay operating cost and moderate interest on investment.

New York's Mid-Town East Side Cleans Up

"A Neighborhood 100 *Per Cent Sanitary and Clean."*

THIS is the slogan of the new Clean Up and Stay Clean Committee of the Kips Bay Neighborhood Association of New York City, which has the active cooperation of Health, Fire, Tenement, Police, and Street Cleaning Departments of the city, and of the National Clean-Up and Paint-Up Service in its present campaign. Such a slogan would be ambitious for any civic association representing a substantial section of a great modern city. But the Kips Bay District, extending from 14th to 59th Streets and embracing everything from Fifth Avenue to the East River, has long struggled with a complex of apparently almost insoluble social problems including those of public health, sanitation, and child welfare.

This is a section of miserable poverty and "old law" tenements (and of some of the greatest per-block congestion in the New World) as well as of the highest residence rentals in America; of great wealth and palatial private homes; abattoirs, power-plants, factories and businesses; push-carts and small shops world-famed for exclusiveness; the Grand Central Station and nearly a hundred hotels, great and small. It is a section of fast-changing population, but two-thirds of the whole is foreign-born or first-generation American. East of Third Avenue, in the tenement regions, Irish, Italian, and German predominate, with Greek, Armenians, and Spanish closely following, and with twenty-odd other nationalities included.

The new movement, operated from the Association's headquarters, 794 Second Avenue, was launched by the creation of an organization of Block Supervisors who will try to enlist all public-spirited merchants, janitors, building superintendents, landlords, and citizens in a clean-premises contest. All contestants are being asked to submit their premises for inspection, and, upon satisfactory showings when quarterly inspections are made, will be awarded certificates. Printed rating plans give inspection standards for inside and outside, and are provided for both residence and business requirements. The 100 per cent cleanliness certificates won for four successive quarters, will entitle the storekeeper, apartment house superintendent, or other contestant to a permanent engraved certificate for display. The aim of the Association is to conduct the campaign along such lines that the possession of a certificate will be an unmistakable business asset because the public will be trained to look for it.

"High and low, rich and poor, property owner and tenant, all have direct interests at stake," the Committee urges in its campaign appeals. "We are preserving life, making life more efficient, and enhancing the civic self-respect of the entire neighborhood."

Needed: A Foundation for Housing

THE creation of a new foundation devoted to the study of housing problems is strongly urged by Frederick P. Keppel, President of the Carnegie Corporation, in the annual report of the Corporation published in January. President Keppel believes that, while the many large foundations in the United States are forwarding the progress of the human race immeasurably, there is still room for new and smaller foundations, whose function should be the studying of a specific social welfare problem, such as housing.

"It is a commonplace that a man buying an automobile today pays about half the price he would have had to pay a few years ago, and gets twice as good an article," President Keppel declares. "If, however, he has to build a home, he will find conditions just about reversed. The only reason for this absurd situation is that one industry has profited by first-rate scientific and engineering thought and the other has not. It certainly cannot be laid to the rising cost of material and labor, since this has affected both industries alike. A foundation devoted to the study of housing problems and equipped to experiment in different types of design and construction would have the chance to make a contribution of inestimable significance toward the improvement of present conditions."

Getting the Best Results with Asphalt Filler for Brick Pavements

By HUGH W. SKIDMORE
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EITHER the ideal filler material has not yet been developed, or the best methods of using present fillers have not been devised. After fifty years or more of extensive use of both vitrified brick and stone block as pavement surfaces, there remain several important desiderata with respect to fillers. Most of the progress that has been made in the art has been through the efforts of the construction engineers and contractors who have built the pavements. Their experimenting for the most part has been sporadic and incomplete. It has been conceived and executed almost entirely without intimate knowledge of the peculiar properties of the filler material or the possibilities of such materials from the manufacturing standpoint. In other words, engineers have been compelled to work in the dark more or less with whatever material could be easily had, and usually with a feeling of considerable doubt as to the final result. Not unlike a very backward child, the development of brick filler practice has been painful to watch, expensive, and without much sense of direction, so that now with maturity in years reached, it still is possessed of the mental development of the child.

Asphalt Is Desirable as a Filler

It seems fairly certain that bitumen in some form, and especially asphalt because of its desirable characteristics, will prove to be the best material for filling brick and block pavements. Even now, asphalt is considered by most engineers to be by far the superior of all other fillers. This popularity has been gained purely by superior performance interspersed for a short interval by the typically American widespread adoption of the cement-grout or mortar fad without first determining its true merit and limitations. Sand without a binder was quickly ruled out with the coming of rubber tires and their attendant suction and continually increasing vehicular speed.

Attributes of an Ideal Filler

The attributes of an ideal filler have been defined by R. S. Beightler, Chief Engineer, Ohio State Highway Department, as follows:

1. Seal the joint against water.
2. Support the edges and corners of the brick.
3. Allow for expansion and contraction.
4. Completely fill the joints.

I would add to these, three functions which I consider equally as important:

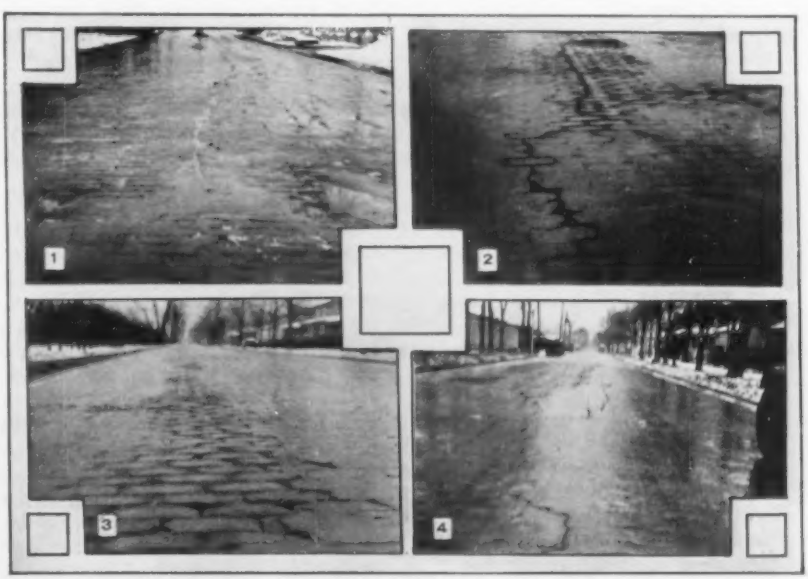
5. Act primarily as a filler and not as a seal-coat.
6. Permit the wearing surface to function as a brick structure and not as a thin concrete slab of inferior quality.
7. Continued performance of all these duties without impairment of the brick surface, without unduly increasing the cost of maintenance, and without destroying the salvage value of the brick.

Cement Grouting Inferior

If anyone doubts the fact that a brick pavement filled with portland cement grout is in effect a concrete slab, let him undertake an inspection of some of the grout-filled monolithic and semi-monolithic brick pavements of former days, and let him read the report of James E. Howard (Engineer Physicist, Bureau of Standards) published in the 1912 Proceedings of the American Society for Municipal Improvements (pages 156 to 171). That a cement mortar filled brick surface is a concrete slab inferior to the concrete of present paving practice is bound up in the fact that such a structure contains a preponderance of large units individually stronger than the mortar binding them together, and the mortar of inadequate quantity and improper distribution to insure a continued period of structural integrity under average service conditions.

Development of the Mastic Filler

Sand-filled brick pavement did fairly well until rubber tires and increased volume of traffic came along, despite the fact that it was not waterproof and provided no protection to the edges of the brick, which was not such an important item in the days of the repressed block. The fact that this type of filler had some considerable merit in former years might still indicate possibilities of waterproofing the sand and so binding it in place that it could not be dislodged by traffic. This thought leads directly to the door of mastic filler, which is of course a compromise between sand and the straight bituminous filler. But it also indicates the possibility of developing a penetrated or mixed-in-place mastic or, perhaps more aptly designated, a sand-asphalt or bituminated sand filler. By partially filling joints with sand, then applying cut-back or quick-breaking emulsion (both of which are on the market and can readily be supplied in any consistency), it seems entirely possible that a very satisfactory filler might be developed. Such procedure would re-



TRIALS AND TROUBLES CAUSED BY IMPROPER FILLERS IN BRICK PAVEMENTS IN OAK PARK, ILL.

1. North Boulevard, monolithic brick laid in 1916. Note the wide cracks, crushed brick and generally worn-out pavement, only 13 years old. 2. Maple Avenue, laid in 1916 with portland cement grout filled brick on portland cement mortar cushion on a concrete base. 3. Another section of Maple Avenue, showing the fractured brick and spalled edges due to the portland cement grout filler. 4. Another view of Maple Avenue, showing wide cracks and large area of fractured brick and broken edges in the foreground

quire joint spaces of proper width, which could readily be accomplished by means of lugs or spacers on the brick, or some sort of spacing device to be used during laying.

Conical Pouring Pot vs. the Squeegee

Some of the best examples of brick pavement now in existence are among those of the early days of asphalt filler, when the old conical pouring pot was in vogue. In many respects this method of application is still superior to the squeegee. At least it places the filler where it should be—in the joints, and it leaves the surface of the brick clean and smooth. When the pavement is completed, there is no doubt about its being a brick pavement rather than an asphalt surface treatment job. Probably the squeegee has speeded up construction and reduced laying costs, but just how much has been saved in initial cost and how much has been sacrificed of the true value of the pavement with respect to smoothness and non-skid texture? Unless these questions can be definitely answered by the industry, we are still far from a solution of the filler problem, and it must be solved to insure the popularity of a worthy paving material.

A Bitumen-impregnated Sand Cushion

Has the idea of a bituminated sand cushion — not a mastic — been thoroughly investigated? If so, why is it not used more extensively? Does it add to the initial cost? If so, how much? Surely not enough to rule it out of the best practice in brick pavement construction, if it really has merit as it would seem to have.

By the term "bituminated sand" I mean sand as ordinarily used for cushion, dried and coated with a very small amount of soft asphalt or tar (cut-back or emulsion might also be employed). Usually 2.5 to 3.0 per cent by weight will provide sufficient coating and cohesiveness without interfering with workability when handled cold. In fact, such a composition can be handled cold like uncoated sand and yet it will compress slightly under a light roller, produce a bed of real cushioning ability and stubbornly resist displacement.

Is the Ideal Filler Discoverable?

It is very doubtful, indeed, if the ideal filler, *per se*, will ever be discovered From even a fairly casual engineering analysis of brick pavements one is at once impressed with the thought that the problem is complex. A number of major factors affect the accomplishment of a satisfactorily filled brick pavement:

1. The brick; their shape, size and dimensional uniformity; absence or presence of integral joint spacing devices; their condition when the filler is applied, whether wet or dry; the care used in laying, either with close or wide joint spaces, etc.

2. The filler; its ability to fill the joint space and remain in position under traffic and exposure; its cementiciousness; its susceptibility to drastic changes in temperature; its viscosity at pouring temperature and under summer pavement temperature; its ability to resist, for considerable periods of time, exposure to temperatures capable of producing proper liquidity for pouring; the method of application, whether by pouring pot, squeegee, etc.

3. Weather during construction and climate throughout the year.

4. Base and subgrade, and likewise drainage.

5. Skill and care used in application, together with equipment employed.

WISCONSIN AVENUE, OAK PARK; 4-INCH REPRESSED BRICK LAID ON A 1-INCH SAND CUSHION ON A 6-INCH 1:3:6 PORTLAND CEMENT CONCRETE BASE, WITH ASPHALT FILLER APPLIED WITH POURING POTS
Note the excellent condition of the pavement laid in 1909, after 20 years of service

Thus it is clear that the exact nature of the filler may vary with conditions and methods of construction.

Care Necessary in Handling Asphalt

The exact condition of the filler as it finally becomes a part of the pavement is of extreme importance. It may be well enough to determine in advance the qualities desired, but will the asphalt as it finally exists in the joints resemble the original material? Suppose weather or some other contingency halts construction for several hours or even days, and the filler in the kettles is kept hot during the delay. It is certain that an asphalt cement, so abused, will suffer in quality. In fact, it is probably true that none of the materials now on the market reach the pavement in their original consistency, mainly because of the lack of knowledge, on the part of the user, of its limitations in this respect. Melting kettles with no provision for preventing local overheating are carelessly charged and fired without even a thermometer available for testing temperature. There is probably no other industry employing asphalt as an important element in which is displayed less care in its handling and less practical knowledge of its limitations. Even the ideal filler will not be entirely fool-proof.

Specifications

Of the asphalt filler specifications now in use, that of the Ohio State Highway Department is probably the best-adapted to the purpose, especially for squeegee application. It at least guarantees a product that will not quickly lose its asphaltic characteristics, unless it is abused in heating. This specification has also been accepted tentatively by the American Association of State Highway Officials, as an alternate to the old high melting point, low ductility blown asphalt. The latter type is unquestionably better adapted to a method of application which confines it to the joint spaces rather than to the squeegee process, since it is not satisfactory as a thin coating over the entire surface.

It is not possible to accurately distinguish the more lasting or the more easily applied of two fillers complying in all respects with the best of the specifications now in use. Whether or not this fact is important can only be answered by a careful study of actual field performance tied in with laboratory studies. A comparative analysis of two well-known brands of filler, both of which comply with the Ohio specifications, was found to be as follows:

Test	Filler	
Flash point, open cup method	540°F	430°F
Softening point (ball and ring (H_2O))	143°F	156°F
Penetration at 32°F (200 grams, 1 min.)	30	29
Penetration at 77°F (100 grams, 5 sec.)	57	50
Penetration at 115°F (50 grams, 5 sec.)	149	118
Loss on evaporation at 325°F, 5 hrs. (50 grams)	0.02%	0.10%
Penetration of residue, at 77°F	52	49
Per cent loss in penetration	8.8	2.6
Ductility at 77°F	14.5 cms	14.5 cms
Bitumen soluble in carbon tetrachloride	99.9%	99.9%

In addition to the prescribed tests, the following were made:

Test	Filler A	Filler B
Ductibility at 32°F (1 cm per min.)	4.25 cm	4.00 cm
Ductibility at 32°F (¼ cm per min.)	4.75 cm	4.50 cm
Cementing value at 41°F	.0715 kgm	.081 kgm
Elongation at 41°F	4.00 cms	4.50 cms
Viscosity, Furol, at 350°F	81 sec	181 sec

While these two materials readily comply with the specifications and have little, if anything, about them (within the prescribed tests) to indicate any

possible distinguishing difference either during their application or in their final position in and upon the pavement, they show a marked difference in high temperature viscosity, which immediately shows that one will be more easily applied than the other, which might mean that either a better job of filling could be had with one, or that in order to secure as good a job with both, one would have to be applied at a higher temperature. This characteristic would also indicate that filler "A" could probably be squeegeed out to a thinner film than "B" when customary pouring temperature is obtained.

There is little or nothing to indicate, even to the trained asphalt technologist, superiority of either material with respect to adhesiveness. There is some evidence that asphalt "A" might harden somewhat more rapidly than "B" in case they should be exposed to a high temperature for too long a period previous to application. "B" is slightly superior to "A" with respect to its susceptibility to temperature change.

Routine laboratory tests for compliance with the specifications would indicate no choice between these two materials, and perhaps none is justified. However, greater extremes than these will be frequently met within the testing limits of the specifications, and more extended laboratory investigation together with field studies might show one or the other of these fillers superior in its performance in the joints or on the surface. If one should be found, for instance, to retain its desirable proportion in the joint and at the same time quickly disappear from the surface, it would seem to approach the ideal filler.

If the ideal filler has been produced, it has been by accident, and it has not been recognized as such under methods of application so far developed. Perhaps an accident may some day disclose the ideal combination of brick, filler and construction method; or this valuable information may be developed by systematic engineering investigation.

ACKNOWLEDGMENT.—From a paper presented before the 24th annual meeting of the National Paving Brick Manufacturers Association.

Salvage from Rubbish Collection Yields Satisfactory Returns

By J. E. McDOWELL
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MUNICIPAL REFUSE DISPOSAL PLANT,
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THE Municipal Refuse Disposal Department of Pasadena during the past fiscal year collected 13,243.83 tons of garbage at a cost of from $2.30 to $2.50 per ton. A high order of efficiency and systematic thoroughness is maintained as the city is divided into eight districts and the Department has eight trucks, allotting one driver and two helpers to each truck.

Daily collections are made in the downtown section and hotel areas, and the residential districts are covered twice each week. The trucks are held to a definite schedule of two loads each every day. Residential collections are made directly from the back yards, while hotel and downtown garbage is gathered from the alleys. All garbage from homes must be drained and wrapped in paper before it is put into the cans, and all householders are required to provide regulation galvanized cans of 8-gallon size, meeting with departmental approval.

Incineration and Hog Feeding

The loaded trucks are driven to the incinerator, and from there the garbage is delivered to the Western Feeding Co., of El Monte, in which place it is fed to hogs. The working force at the incinerator includes a superintendent, a subforeman, two firemen, one paper baler and laborer, and a roustabout. All rubbish is incinerated free of charge, and quantities of paper and junk are salvaged and sold. The current reports indicate that the sales have brought a revenue of approximately $225 a month. In the last twelve months the tally sheets show that 8,100 tons of rubbish and 65 tons of dead animals were incinerated at a cost varying between 85 cents and $1 a ton. Clinkers and ashes are hauled from the incinerator to the city dump each day in regular department trucks and are used for filling purposes. The city gleans an additional profit from the sale of garbage sent to the farm at El Monte, as the prices range from 65 to 80 cents a ton for hotel garbage and from 25 to 40 cents a ton for residential garbage, the scale fluctuating according to the current quotation of hogs at the stockyards.

Miscellaneous Collection and Salvage

The Municipal Refuse Department also handled the brush dump where all tree trimmings and tree trash were received at the rate of about 500 loads a month and burned as rapidly as possible on the dump. This has been recently discontinued and the trimmings are cut into small pieces by machine and burned in the incinerator.

A special truck having a driver and four helpers is constantly maintained for the collection of tin cans and bottles, the entire city being covered at periodic intervals. All bottles and cans are collected from backyard containers and then hauled to the dump, where they are sorted, and they are later sold in Los Angeles for their tin and glass value. Collections thus made at a cost of $1.88 a ton reach 327 tons each month and total 3,924 tons a year. They continue to yield a satisfactory rate of revenue and furnish conclusive proof that, while there is a small percentage of actual waste, practically all rubbish has a redeemable value, when properly handled. Best of all, it emphasizes the fact that specific collections of this sort enhance the cleanliness and charm of the city, and it may offer a logical explanation of the fact that this one-time tourist city is gaining prestige as a home city.

Automobile Organizations Cooperate in Making Safety Movie

"THE Cross Road Puzzle" is the title of a two-reel motion picture film produced by the American Automobile Association and the National Automobile Chamber of Commerce as a contribution to the work of the National Conference on Street and Highway Safety in promoting the Model Municipal Traffic Ordinance for American cities.

It has an engaging human interest appeal. Pa and Mother Miller, inspired by the departure of their daughter on her honeymoon, decide to have a belated honeymoon of their own from their home in Iowa to New York, of course via Niagara Falls. In high spirits, and entirely unaware of the confusing traffic regulations to be encountered, they are off, only to have a series of encounters with hard-boiled cops, snarled traffic, and conflicting ordinances and signs in different cities. But of course there's a happy ending, and Pa goes back to the old home town and succeeds in having the Model Municipal Traffic Ordinance passed by the home folks.

The film was made at a cost of over $5,000. It is available to local automobile clubs for showings to members, city officials, civic organizations, etc., at a nominal sale or rental price from the American Automobile Association, Pennsylvania Avenue at 17th Street, Washington, D. C.

Parking Restrictions and Reactions in Several Large Cities

As a feature of its research program in connection with the formulation of the Cooperative Customer Parking Plan in Newark,* the Broad Street Association collected data on parking restrictions now in vogue in several large cities and recently released this interesting information in the form of an official report.

In addition to obtaining facts on the parking policies of the municipalities surveyed, the Association requested the Chambers of Commerce, or city officials who supplied the data, to summarize briefly the reaction of the merchants to the parking restrictions. While there is some similarity in the parking rules followed and in the attitudes of the merchants in the various cities, practically each reply is sufficiently personal and enlightening to be summarized by itself. The information presented in the Association's report was submitted by THE AMERICAN CITY to the appropriate sources in the various cities concerned, and some revisions were made by these to reflect the latest aspects of the situation. The resulting information for each city is as follows:

St. Louis

Parking is prohibited downtown from 7 a.m. to 9.30 a.m. and from 4.30 p.m. to 6 p.m. One-hour parking limit is in force from 9.30 a.m. to 4.30 p.m. These restrictions have been in vogue for two years. The St. Louis Safety Council, which supplied this information, states that the local merchants are very much in favor of the present regulations, although they believe that there could be a stricter enforcement of the one-hour parking law. He also expresses the opinion that the merchants are almost unanimous in their support of the early morning and late evening restrictions.

Cleveland

According to the Cleveland Chamber of Commerce, parking is prohibited during the morning and evening rush hours on many streets "extending several miles in the central part of the city." No marked complaint has been made by merchants against these restrictions.

Chicago

Parking is prohibited from 7 a.m. to 6.30 p.m. in the main business section and has been since January, 1928, reports the Chicago Association of Commerce. Apparently, this strict regulation has not been harmful to retail business, as some of the opposing interests already have opened additional places of business in that area, says the Association.

Philadelphia

The Philadelphia Chamber of Commerce states that parking is prohibited entirely on some of the downtown streets, and that there is considerable division of opinion among merchants, with the result that an ordinance has recently been approved for the appointment of a traffic engineer to study and have control of the entire parking situation in the city.

Boston

The statement of the Boston Chamber of Commerce asserts that parking is prohibited on about 65 per cent of the curb area in the central business district and also on many streets outside of that district. Where parking is permitted, a one-hour limit is prescribed. There are a few special curb lengths where all-day parking is permitted after 10 a.m. Majority sentiment among the business interests appears to accept the necessity of parking prohibitions. The real problem is that of enforcement.

Washington

Rush-hour parking is prohibited on certain boulevard highways carrying traffic into the central section of the city, says the Washington Chamber of Commerce. This restriction is reported to be opposed by retail stores which are affected. There are also time limits on parking according to the degree of congestion, which are enforced on all major streets.

Atlanta

A morning and evening rush-hour ban on parking in the business section exists in Atlanta, reports the Chamber of Commerce. All parking is prohibited on a very few narrow streets in the business section. Parking limits on other streets range from thirty minutes to two hours. Some of the merchants so affected are reported to object to such regulations, but the Chamber of Commerce informant considers that the regulations are reasonable.

Kansas City

Parking is prohibited on Main, Walnut and Grand streets, the three most congested north-and-south streets, between 8 a.m. and 9 a.m. and between 5 p.m. and 6 p.m. One hour parking is permitted on these streets from 9 a.m. to 5 p.m. On two other north-and-south streets at the west edge of the congested area, Baltimore and Wyandotte, parking is prohibited entirely. On most of the east-and-west sereets, parking is prohibited day and night in the congested district. These streets in general are narrower than the north-and-south streets referred to above. These data are supplied by the Kansas City Chamber of Commerce, which finds that the Merchants' Association members in general are in favor of the present regulations. A city-wide traffic survey is under way, with Dr. Miller McClintock, of Harvard, in charge.

Buffalo

Buffalo prohibits downtown parking from 7.30 a.m. to 9.30 a.m. and from 4.30 p.m. to 6 p.m. The Chamber of Commerce reports that the merchants at first objected to these regulations, but upon conducting their own survey and finding that a very small percentage of their customers arrived by automobile, they insisted that the police enforce the regulations.

Indianapolis

There is no rush-hour parking ban in Indianapolis, declares the Chamber of Commerce. The Chamber's informant believes that a rush-hour parking ban is unnecesary in Indianapolis and that it would meet with strong objections from business interests and motorists.

Baltimore

The Charles Street Association of Baltimore reports that for some years parking in the business district has been prohibited from 7.30 a.m. to 9.30 a.m. and from 4.30 p.m. to 6 p.m. The Association states that the merchants feel that the above restrictions are reasonable, and make no objection to them. In a recent referendum, the merchants voted against any further reduction of parking hours in the downtown district.

Providence

The main business district of Providence is subject to a one-hour parking limit, with few exceptions, reports the Retail Merchants Division of The Providence Chamber of Commerce. Parking is entirely prohibited on the main business arteries from 4.30 p.m. to 6.15 p.m. The Retail Merchants Board recently went on record as opposed to any reduction in the one-hour time limit. While local merchants believe that parking restrictions will undoubtedly be increased from time to time, they do not favor or expect any drastic change for a long time to come.

San Francisco

The San Francisco Traffic Survey Committee states that parking in that city is not prohibited downtown during morning and evening rush hours, but that parking is forbidden entirely on certain narrow streets and on one important street where unusual conditions exist.

The Traffic Survey Committee, Dr. Miller McClintock, Director, is now conducting an exhaustive engineering and economic study to evolve a specific community plan for a progressive, ultimate, economic solution of the parking problem, through the development of suitable off-street parking facilities to meet the demand for parking in each section of the central business district. This study includes also a complete review of present curb parking conditions and regulations,

* See THE AMERICAN CITY for January, page 155.

and it may result in recommendations to change the present ordinance requirements relating to curb parking.

Cincinnati

In Cincinnati, the Chamber of Commerce reports that parking is prohibited on some downtown streets from 7 a.m. to 9 a.m., and from 4 p.m. to 6 p.m., on one side of the street in the morning, and on the other side in the afternoon. There are a few streets on which this is done during these hours for both sides, where the traffic is particularly heavy. There is no question but that a number of merchants will raise objections to different ideas of no-parking regulations, with the claim that such a policy means a loss in business.

Detroit

A fairly detailed report of the parking situation in Detroit is offered by the Retail Merchants' Association. Parking in that city on the business streets is limited to one hour except where it has been prohibited in the downtown loop district and in the main "stop streets" from 7.30 a.m. to 9.15 a.m., and from 4.30 p.m. to 6.15 p.m. Cars are towed if found parked in violation of these regulations, and the Association states that, in order to rigidly enforce these features of the traffic ordinance, the Common Council recently voted $50,000 to be used as a revolving fund to lease impounding areas for cars towed and for the acquisition of equipment with which to tow cars. A penalty of $3 is charged the violator for towing. A 30-day trial period was instituted, ending September 10, 1929. Continuing, the Association said:

"As the 30-day period expired, the various groups which had been instrumental in having the towing experiment inaugurated, all agreed that it had proved satisfactory, except that it had been concentrated almost entirely in the downtown section and the police officers had not used quite as much courtesy and discretion as they should have. These two detrimental features stimulated considerable adverse publicity against the drive from outlying community newspapers and individuals. At a meeting of the Common Council following the trial period, the Inspector of Traffic indicated that if the Council would continue to make available the equipment necessary for the rigid enforcement of the ordinance in connection with the hourly parking limit, the Police Department would make certain revisions in the ordinance, which would prohibit parking on the incoming side of the main arteries only from 7.30 a.m. to 9.15 a.m., and on the outgoing side of the same thoroughfares only from 4.30 p.m. to 6.15 p.m. Merchants in the outlying shopping centers on these main arteries who had been the ones to object to no-parking in certain morning and evening hours changed their attitude, and it is felt that both the outlying and the downtown districts will be better satisfied with the new conditions if they can continue to be rigidly enforced."

Pittsburgh

The Pittsburgh Chamber of Commerce listed a wide variety of parking restrictions in vogue in various parts of the city, extending all the way from no parking at any time, to one-, two- and three-hour parking. Commenting on the various restrictions, the Chamber says:

"Each of the various restrictions was first received with more or less consternation, and predictions that the retail business of the downtown triangle would be driven into the suburbs. In the retail sections of the suburbs, however, it has been found necessary to install similar regulations. Latest reports on the business of department stores indicate a healthy increase. Some complaints are heard among the individual retailers, probably due to changing business conditions quite as much as to parking regulations."

Merchants Agree to Ban Projecting Signs on Important Street

PROJECTING signs on Market Street in Philadelphia may soon become a thing of the past as a result of a resolution adopted recently by the Board of Directors of the Market Street Merchants' Association.

An ordinance already has been prepared for introduction in the city Council prohibiting the erection of overhanging signs, pennants, banners, posters or any other form of advertising which projects out more than 18 inches from the building line.

This ordinance, which has "teeth" in it, according to *The Philadelphia Record*, in the form of a jail sentence and provision for the forcible removal of signs by police, if necessary, is virtually assured of passage, states Howard C. Johnson, Chairman of the Merchants' Committee which framed it with the assistance of city officials. It would exempt theater and hotel marquees, however, as well as the Reading Railway marquee between 11th and 12th Streets.

"Out of 451 Market Street merchants who were canvassed on this question, only 47 favored permitting the situation to remain as it is," Mr. Johnson said. "Of the remainder, 208, including all the largest department stores and practically all of the important merchants, were opposed to all kinds of signs, while the others questioned desired permission for the display of signs of various stipulated sizes."

Commenting on the movement, Anthony Geuting, President of the Market Street Merchants' Association, termed it the biggest step in the rejuvenation of Market Street which has ever been taken.

"There is nothing so crude and disgraceful in modern business as to clutter a street with ugly and obtrusive signs which destroy the entire dignity of the thoroughfare. Such signs usually are promoted by opportunist merchants who wish to smother patient merit at the expense of everything which is constructive, legitimate and architecturally attractive.

"As President of the Market Street Merchants' Association, I am making every effort to eliminate this nuisance and have the support of all clear-thinking and progressive merchants. Such merchants are ready to pull down their signs in unison with their fellows, realizing that the days of the totem pole are past and that appealing window displays and architectural features should supplant them.

"With the signs off Market Street, it will at once take its proper position as one of the leading retail centers of the world. It deserves that position right now, but unfortunately, under present conditions, one cannot see the street because of the signs."

Salaries of Police Chiefs in Wisconsin Cities

AN interesting analysis of the salaries paid police chiefs in 117 of the 143 cities of Wisconsin has been released by the Municipal Information Bureau of the University of Wisconsin Extension Division in response to requests from city officials for such information.

Milwaukee, of course, stands at the head of the list, with a salary of $6,000 per year for its Chief of Police. Then follows a group of 20 cities of more than 10,000 population, exclusive of Milwaukee, with population of over half a million, and the most common salaries in this group are $2,700, in four cities, and $2,520, in two cities. Kenosha, with $4,000, pays the lowest.

In the 5,000 to 10,000 population class of 19 cities, Wauwatosa, with $3,000, pays the highest salary for the Chief of Police, and Menomonie, with $1,200, pays the lowest. The most common salaries in this group are $1,800, $1,620, and $1,500.

In 77 cities under 5,000 population, the most common salary is $1,200 a year, in 21 of them; $1,500 in 9; $1,620 in 5; and $1,800 in 5. Monroe, with $2,100, pays the highest salary, and Juneau, with $100, the lowest.

The analysis of salaries is contained in Information Report No. 74, issued as of November 29, 1929, which contains as well statistics on the number of officers in the Police Department of each city listed; the salary of each officer; the number of days off for each member of the force; and the number of men on pension. The data were compiled and the report formulated by Miss Celia Harriman, Assistant and Librarian of the Bureau, and copies may be obtained for 25 cents each by writing to the Bureau at the University of Wisconsin, in Madison.

EDITORIAL NOTE.—A compilation of salaries of all ranks of policemen in 49 cities of 30,000 to 100,000 population will appear in next month's issue.

Disposal Methods Change with Growth of Fort Thomas, Ky.

Small Unit Incinerator Solves Problem in Town in Cincinnati Metropoltian District

By C. H. KUHN
Assistant City Engineer,
Fort Thomas, Ky.

FT. THOMAS is a rapidly growing residential town in the Cincinnati metropolitan district on the hilltops overlooking the city and the Ohio River. It has grown from a population of about 8,000 in 1920 to 13,000 at the beginning of 1930. It is about four miles in length, paralleling the river, and is two miles wide at the widest point. Rapid development of new subdivisions and streets, together with the building on vacant lots on old streets, has brought about an ever changing problem in the collection and disposal of the city's refuse.

Earlier Collections of Two Classes of Waste Made at One Time

Previous to the building of the new incinerator, ashes, paper, tin cans and rubbish were put in one container, and animal and vegetable refuse in another. Both were collected at one time with one truck divided into two compartments. The ashes and rubbish were deposited on a dump, and most of the paper was baled and sold. The garbage was placed in large galvanized cans and left at the dump site, where it was picked up by the owner of a hog farm. When the population was smaller, collections were made three times a week by two men in a 2-ton truck with a dump body divided into two compartments. The topography of the town is such that the street layout is not rectangular but consists of one main street with many short dead-end streets and a few main cross-streets and arteries leading into town. This materially increases the haul and the time required for collection.

The Old Dump Was Always Unsightly

Disposal was effected by one dump attendant, who received $50 per month salary, a two-room cottage and the privilege of selling paper and junk. This dump was no exception to the rule and was always unsightly and unsanitary. It was located on one of the main arteries leading into town, which made its elimination exceedingly desirable.

Incinerator Started Last August

In the fall of 1928 a bond issue was approved by the voters for the building of an incinerator. Bids were received from most of the well-known builders of incinerators and, after much discussion and visits to other cities, the garbage committee of Council recommended the purchase of a Superior incinerator, overriding the City Engineer's recommendation in favor of another plant. A Superior incinerator rated at 36 tons in 24 hours was built and put in operation in August, 1929. The plant is operated half of each day by one man on full time with an assistant for half of the day. This operator also cares for a sewage treatment works which adjoins the incinerator. The operator lives in a three-room city-owned cottage on the site, which makes it convenient for him to inspect and give the necessary attention to the sewage treatment apparatus and the heating system at all times. The operator receives a salary of $1,440 per annum in addition to free living quarters, light and water. The helper receives 50 cents per hour and works on street maintenance the other half of the day.

The grounds around the new disposal plant will be beautified next spring and every effort bent to make it an asset to the community and a public service unit to be proud of. This plant is located near the old dump site in the southern section of the town. A small unit without provisions for additions was built, for it was felt that when additional incineration was needed, it would be advisable to build another small unit in the northern section of town. This would serve the double purpose of shortening the haul and at the same time would provide another site for ash disposal.

Savings in Collection

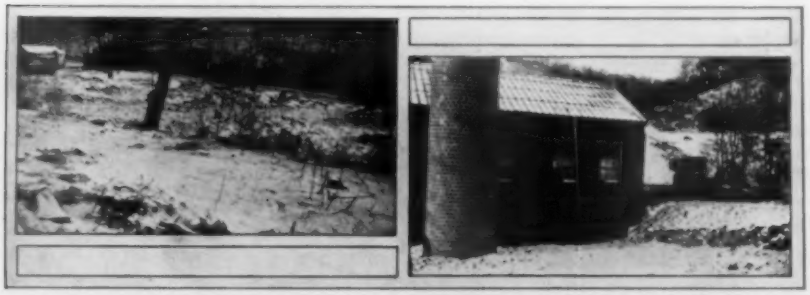
The collection of garbage and refuse was reduced from three to two collections a week two years ago. This was done because of the large increase in population and in order to continue to make collections with one truck. Three collectors are now employed who receive $1,440 per annum.

In preparing refuse for collection, the occupant of each house is required by ordinance to separate ashes from other refuse and place both in covered metal containers not to exceed 24-gallon capacity. All wet garbage must be drained and wrapped.

Previous to undertaking the enforcement of this ordinance, baskets, tubs and all sorts of vessels were used, resulting in littering the streets and increasing the labor of loading the truck. Much patience and many notices were required to educate the householders to the change in the collection system. The garbage collection truck is covered with a tarpaulin in transit and this has been found to be best adapted to the varying loads. At the end of the day the truck is thoroughly washed with hot water. Complaints have been reduced to a minimum.

Dump Abandoned

When dumping on the old site was abandoned, the rats which had overrun the place began migrating into surround-



THE OLD RAT-INFESTED DUMP IN FORT THOMAS WHICH THE INCINERATOR AT THE RIGHT HAS DONE AWAY WITH, PERMITTING ITS CONVERSION INTO A PLAYGROUND

ing residences. Rat poison was put out in improvised boxes to safeguard other animals.

The abandoned dump is to be leveled off and covered with a layer of earth, sodded and converted into a playground during the course of the year.

Costs

The total cost of collection and disposal for labor amounts to $6,600 at present. Under the old method of disposal the cost of labor amounted to about $5,100, so there is now an added cost of $1,500 per annum, but this is money well expended because of the great advantages in sanitation. Not among the least of the advantages of the new disposal system is the elimination of the second hauling of the garbage through the town on the way to the hog farm.

Further Service Contemplated

Collections are now made from the curb, but the writer looks forward to the time when they will be made from the door. This is particularly desirable in a town such as Fort Thomas where there are no alleys.

This additional service will somewhat increase the cost of collection, but once it is established, I think that the taxpayers will feel that it is worth the difference for the extra convenience, especially in view of the fact that the unsightly garbage-can will not be seen on the street on collection day.

A GARBAGE COLLECTION TRUCK, WITH THREE COLLECTORS AND THE INCINERATOR OPERATOR, OUTSIDE THE FORT THOMAS INCINERATOR

Strengthening the Position of Municipal Power

AT the recent convention of the Public Ownership League of America, at Muscle Shoals, R. E. McDonnell, of Burns & McDonnell, consulting engineers of Kansas City, Mo., in an address on "The Future Outlook for Municipal Power Systems," indicated methods whereby municipally owned electric light and power plants can make themselves more secure as invaluable community assets.

Commenting on the improvements in the generation of electricity he said:

"The steam central stations are bigger and better. The steam turbine units are larger each year. Boilers are bigger and steam pressures higher. Waste heat is being recovered. The economy of production of electricity is not alone with the large central steam plant; the diesel oil engines have, with their economy, revolutionized the power industry. Eighteen years ago one diesel company was operating in the United States. Now there are 23 diesel concerns—one company having installed over 2,000,000 horsepower. The diesels have saved the isolated plant, for the transmission line loss from the large central plants is too great to compete with a modern diesel plant, especially where the line is long and overhead investment high. Diesels are now putting electricity into many of our hydro-electric power lines at a less cost per kilowatt-hour than the water-power developments of a few years ago. With fuel oil now available at a reasonable rate in nearly every state in the union, and with the known economy of diesel power, the municipal systems have gained a distinct advantage not only in the smaller cities but in the larger ones as well."

Municipal systems have decreased in number since the 1922 census of electric central stations (see THE AMERICAN CITY for September, 1929, page 97); but Mr. McDonnell pointed out:

"Where the most municipally-owned plants exist and the results are of more common knowledge, the municipal plants have gained. The 1927 census shows that in the five-year period between 1922 and 1927 Nebraska increased its municipal plants from 225 to 242. In the same five-year period Kansas increased from 215 to 223. Illinois, the center of the Insull activities, in the same period dropped in municipal plants from 121 to 76, or a loss of 45—the highest of any state."

To some extent, it was stated, municipal systems have emulated the private companies in combining into larger groupings, although in much lesser degree. Legislation to accomplish this is being bitterly fought by the companies. Besides this means of mutual advantage it was recommended that all municipal systems, large and small, cooperate in a national organization, paralleling the powerful National Electric Light Association.

In conclusion, the necessity of continual improvement was emphasized:

"The best weapon a municipal plant can use to defend itself, preserve its stability and maintain the confidence of the community, is to keep the plant at its highest efficiency. To permit a plant to become antiquated or obsolete weakens it against any attacks. Like an individual whose vitality is low, the plant is in no condition to put up a strong defense. The municipal plants should ever be alert for higher steam pressures, modern coal and ash handling equipment, economizers, superheat and every means of procuring a lower cost of producing electricity. The economics of diesel power should not be neglected. Private power companies are quick to take advantage of the weakened, low-efficiency, overloaded plants. Bond issues for improvements are bitterly attacked and the opposition is often financed by the power companies.

"Knowing all this opposition: the plant with low rates, low production cost, high efficiency, and a high-class competent board of management, is the one in the least danger."

As a part of the same program, an address on "Public Power and Its Relation to Women" was delivered by Mrs. McDonnell, who stressed the desirability of increasing use of electricity in the home—a point for the particularly appropriate concern of municipal systems. She cited the following data from a survey made by the General Federation of Women's Clubs:

"Thirteen of the 28 in every 100 farm homes having electricity are using it to wash clothes; though more than 20 in every 100 are using electric irons. In less than 4 of every 100 farm homes is there an electric range—a proportion which is about that in the homes in incorporated towns of under 2,500 population.

"We see by this survey that in the urban homes only 35 per cent of the women are sweeping, 27 per cent washing, and 10 per cent cooking electrically.

"In the suburban only 28 per cent have light, only 7 per cent pump water into the homes, 9 per cent sweep and mix dough, 2 per cent sew, 1 per cent churn, 3 per cent separate milk and cream, 4 per cent cook, 1 per cent wash, and 20 per cent iron electrically. . . .

"The real incentive to equip the home properly would be rates for electricity so low that the monthly bill would not become a burden. This would be possible if rates schedules were based on service.

"I hope that the time will come in the very near future when power companies and cities will not discriminate between domestic and other consumers of energy."

The Job of the Airport Manager

Factors Needing Consideration in the Control, Financing and Operation of Flying Fields

By STRATTON COYNER
ROOSEVELT FIELD, INC.
MINEOLA, N. Y.

THE airport manager faces a number of novel problems. Conditions vary at every airport, and there is no established precedent or fixed rules determining the best methods of showing profits from the operation of an airport. Whether the field is municipally or privately owned, the manager cannot rely upon visiting the other fields in his section of the country for the formation of his policies and methods of securing net gains.

Leasing the Airport

A number of airport committees solve the whole problem of airport management by leasing the entire airport, hangars and commercial flying privileges —usually to a local commercial airplane operator. The terms and conditions under which the field is leased vary with each municipality. There is no established precedent as to what the contract between the airport committee and the lessee should contain. The period of lease is usually for ten years, or for a period of five years with varying renewal periods or options. The maintenance and management of the airport are usually left entirely to the operating company, with few restrictions, and the airport committee has nothing to do until the expiration of the lease. That the lessee shall not charge a landing fee, or charge visiting airmen a fee for overnight parking of planes upon the field, and that regular scheduled airlines may use the field free of charge, are among the provisions usually incorporated in these agreements. In leasing a municipal airport, the airport committee should keep in mind that the airport is principally a public utility, and should see that the interests of the municipality in the use and enjoyment of its airport are protected.

Sources of Revenue

The airport manager's first question is how to make the airport produce profits, if a commercial enterprise, or to make it at least self-sustaining, if a municipal undertaking.

The sources of revenue may be divided into the following classes: income from the hangars; income from commercial flying operations; and income from concessions. The earning of these revenues on a busy airport involves the operation of numerous kinds of business, such as the storage, repair and sale of airplanes; sale of parts and supplies; operation of airplanes for the carrying of passengers; school of flying instruction; sale of gasoline and oil; operation of restaurant or refreshment stands; and others. Should the airport management engage in all these various lines of business, or should it sell for a fixed sum to other concerns some of these sources of revenue? Should the airport management operate the restaurant, or should it be leased out as a concession to some experienced restaurateur?

Income from Hangars

A hangar represents storage space or shelter for so many airplanes (depending upon its size), a shop for the repair of airplanes, and a store for the sale of airplanes, motors, parts and accessories. The lease for hangars used at Roosevelt Field contains the provision "to be used

UNITED AIRPORT, BURBANK, CALIF., DEVELOPED BY BOEING AIR TRANSPORT FOR UNITED AIRPORTS, INC.
This is a 240-acre field with six-runway system, macadamized runways being 300 feet wide and averaging 3,500 feet in length

as an airplane hangar for the storage, repair, construction and sale of airplanes, airplane motors, parts and accessories." How is the greatest amount of revenue to be derived from this hangar? Shall the owner of the airport conduct the business of storing, repairing and selling airplanes and accessories, or should the hangar as a unit be leased to a concern which has an agency or distributorship for a certain make of plane? If there is only one or two hangars on the field, and the management of the airport is experienced, the municipality or airport company should then operate the hangars and rent storage space to the agency. If there are more than four or five hangars on the field, this becomes a difficult question.

The operation of the hangar places upon the airport manager the necessity of maintaining, at the hangar, personnel for the servicing of planes, moving them in and out of the hangar, the keeping of more accounts and the collecting of revenue from a number of people instead of from one concern or person whose responsibility can easily be determined.

Then we must consider the question of responsibility for loss or damage to the plane while stored in the hangar. In many hangars signs are displayed to the effect that the owner of the hangar is not responsible for any loss or damage to the plane. This is of course no protection if the owner of the plane can prove negligence on the part of the hangar management. The same rule will possibly be applied by the courts to this question that now applies to the storage of automobiles in garages. Insurance is of course protection against such losses.

An airport, whether privately or municipally owned, must secure and hold the interest and good-will of the community; it almost, of necessity, becomes a community enterprise. This must be considered by the airport manager in determining whether the policy of the airport will be to restrict all commercial activities to the airport company and its subsidiaries, or to allow other aeronautical concerns to share the commercial privileges, lending their efforts to making the airport a center for aeronautical activities.

The determining of rental to be charged for a hangar or for the storage of an airplane, and the provisions safeguarding the interests of the airport which should be part of the lease, are material for another article. Owing to rapidly changing conditions in the aeronautical industry, the lease, as a general rule, should be for a short term, not more than three years, thus permitting changes in methods of operation of the airport. Also, hangar rentals will doubtless be higher in time as the industry grows. If the industry does not expand, a lease does not help much if the tenant is losing money.

Income from Commercial Flying Operations

The income received from commercial flying operations is generally classified upon the books of aeronautical companies as follows: taxi service; passenger or field hops; and student training. Receipts from mail contracts and regular schedule passenger lines are usually thought of as separate items.

If the municipality or company owning the airport retains the commercial flying rights, there is no question but that a subsidiary company should be formed for this purpose.

There are many arguments against the leasing of the commercial flying rights. The difficulty, sometimes, of finding a dependable operating company, the reputation of the field, and the enforcement of field regulations are items which must be considered. Frequently, however, circumstances such as lack of finances and experienced personnel, and the availability of a dependable operating company, render any other course inadvisable.

The operation of taxi service cannot be separated from the carrying of passengers for field hops (short rides in the vicinity of the airport), but whether the same company should operate the school is often a debated question. Economies in personnel, maintenance and equipment are arguments in favor of combining these activities, which are offset by statements that one or the other branch of the service will be neglected and that the policy of using the school planes for passenger hopping and taxi service whenever needed, disrupts the school schedule and causes dissatisfaction among the students, and that the days when the planes are needed for taxi service or passenger hopping are also the days most convenient for the students for their flying lessons.

The terms and conditions upon which commercial privileges are leased vary greatly. Some of these contracts are based entirely upon a percentage basis, some upon a flat rental and percentage, and a few at a definite set figure. The flat rental and percentage basis is most popular and guarantees to the airport owner a certain return with the favorable features of the percentage method. The operating company, knowing that it has to pay a certain amount whether or not it does any business, will endeavor to keep sufficient equipment at the airport and do enough advertising to gain revenues to pay the flat rental.

By what method can the management determine what to charge for the leasing of the commercial flying privileges? The consensus of opinion among aviation officials is that somewhere between 10 and 15 per cent of the gross income of the operating company (exclusive of a rental charge for the buildings occupied by the commercial operator) should go to the airport. There are some, however, who maintain that the airport company should receive 20 per cent. This figure is of course affected by the amount of advertising done by the airport company and the facilities provided at the airport.

The question always arises as to what can be considered gross income of the operating company—whether this should include income derived from trips made from other airports, or whether it should include only the income from trips either originating or ending at the airport. Frequently an operator is charged either a landing fee or a percentage when he uses another airport to take on or discharge passengers, and in some cases the operator pays as high as 25 per cent of the income from these passengers for the use of the airport facilities. Fortunately, however, at present there is a feeling of reciprocal cooperation with regard to the landing of pay-passengers.

The agreement between the commercial operator and the airport owner should clearly define what privileges are being leased, as disputes invariably arise over items not considered by either party at the time of signing the agreement. For the protection of the airport, the contract should contain a provision that the operating company should have permanently stationed at the airport a certain number of airplanes. I know of one instance where, after an accident, an operator retained its exclusive lease of the flying privileges, but moved all equipment, except one plane, to another field. There are many aviation men who maintain that it is a mistake for any airport to lease the exclusive commercial privileges to any one company.

The ambition of every airport, and quite often the reason for their establishment, is to have the airport used as a base for air mail operators and for regular schedule passenger lines. There has been a great deal of discussion as to what the operators of air mail or of regular schedule lines should pay for the use of their airport facilities.

The establishment, either by Federal regulations or by precedent in the industry, of a fair method of charging the regular schedule airlines for airport facilities would save many needless negotiations and greatly further the establishment of passenger lines.

Income from Concessions

Airports in the past have attracted large crowds of people, but few airport operators have made any definite attempts to capitalize this asset of the airport and make it yield revenue, not only in the form of airplane rides, but in the form of income classified as concessions.

The following is a list of possible revenue-producing concessions — some have definite value, others have never

been tried—contained in a report prepared by the writer for President Ludington of the Central Airport at Philadelphia:

Gasoline and oil for airplanes
Automobile service stations
Parking or admission fees
Refreshments
Restaurant, with roof garden and dancing floor
Novelties
Hotel
Swimming pool
Public telephones
Aeroplane show rooms
Toilets with nickel slot machines
Rental of advertising space
Aeronautical clubs
Rental of lockers
Bowling-alley and pool-room
Merry-go-round
Shooting gallery
Sale of photographs
Putting-green for practice golf
Rental of office space
Radio store
Barber shop

The sale of gasoline and oil upon a busy field produces a sizable portion of the field revenue. At some airports the occupants of hangars are allowed to buy and sell gasoline without restriction, but the business thus divided means little to any one, while with economies effected through greater volume it usually proves very profitable to the airport. The writer believes that this business should always be conducted by the airport owner, as the type of service rendered planes has much to do with the popularity of the field. The operation does not require experienced personnel and requires practically no outlay in cash.

Many airports are now considering methods best for servicing planes, by tank trucks or by an underground system of field fuel pits, supplied from a large central tank. Many of the airport engineers now favor the central distributing system, with fuel pits on the field, but the efficiency of this method of refueling is wasted unless oil also is supplied by the same system. It has also been the writer's experience that in most cases the same number of employees is required to operate the central refueling system that is required to distribute by tank truck. The central fueling system requires a greater initial investment, and there is always the danger of loss through leakage if feed pipes are laid underground. The problems included in the servicing of planes are far from satisfactorily settled. Is it more efficient to carry the gasoline to the plane, or to taxi the plane to the gasoline?

SERVICE HANGARS AT ROOSEVELT FIELD, LONG ISLAND, N. Y.

Whether the concessions enumerated above are feasible and produce sufficient revenue to make them worth while depends largely upon the location and surroundings of the particular airport. These concessions depend principally upon the Sunday crowds at the field; yet, they in themselves offer additional amusement for the people visiting the field and will consequently increase the number.

Fees for Admission to Field and for Automobile Parking

The majority of the airports do not charge a fee for admission or for the privilege of parking automobiles. A few years ago the consensus of opinion was that to charge for admission or parking would greatly reduce the number of Sunday visitors and seriously reduce the passenger traffic. Since that time, however, many airports have changed their policy and now make a charge for the parking of automobiles. People are in the habit of paying for parking privileges for automobiles, and this revenue to the airport takes care of the cost of policing the field on Sundays and justifies the airport manager in incurring the expense of having sufficient personnel for taking care that cars are parked properly and that traffic is regulated, giving the airport a neater and more orderly appearance. In the operation of an airport at the present stage of the game, every item of expense must be made to produce revenue.

Very few fields charge an admission fee; the objection put forth against such charge is that the tenants and owners of airplanes seriously object to their friends having to pay for the privilege of seeing the tenants' and owners' planes. This objection can practically be eliminated by the issuance of passes.

Where an admission fee is charged, the airport usually has a program of events, such as parachute jumping and exhibition flying.

It has been the experience of the writer that charging for parking of automobiles has very little effect upon the number of visitors at the field; however, the charging of an admission fee, even though special events are provided for the amusement of the crowd, greatly reduces the number of visitors; and in the long run it would not be as productive of revenue as having a large number of visitors, thereby obtaining a greater revenue from other concessions.

Restaurants and Amusement Features

Where there are large crowds visiting an airport, an attractive restaurant and the sale of refreshments and novelties will produce considerable revenue, and are necessary adjuncts to a modern airport. In determining what to charge for refreshment privileges, it has been the experience of the companies in this business that a gross income of 25 cents per person is not an optimistic estimate for persons visiting the field, and approximately 20 per cent of gross income to the concessionnaire should go to the airport owner. There is no reason why airports should not have many of the features of an amusement park, as the visitors to a flying field are there principally for amusement.

ADMINISTRATION BUILDING AT BUFFALO, N. Y., AIRPORT

Creating the Links of a Vast International Highway Chain

"No greater tie of permanent friendship between nations and peoples could be conceived than this plan."

By KING HAMILTON GRAYSON
CONSULTING RESEARCH ENGINEER

THE long-dreamed-of International Pan-American Highway linking two continents and numberless nations into one vast endless chain is becoming a reality. In half a dozen countries at one time highways and more highways are the leading subject attracting both national and international attention. Step by step, and section after section, the Pan-American links of the chain are steadily being constructed, and the motorist may now find fairly good roads from Caracas in Venezuela along the West Coast of South America to Concepcion in Chile.

The Transandine Highway

One of the most recent links in the chain is that known as the Transandine Highway connecting Caracas, the capital of Venezuela, with the western states. This road passes through the important cities of Maracay, Valencia, San Carlos, Barquisimeto, Trujillo, Valera, Merida, and San Cristobal, and in the near future it will be completed to Cucuta, the capital city of the Department of Santander del Norte, Colombia. The importance of highways today is clearly demonstrated by this road, which has entirely changed the merchandising situation of the country which it traverses, saving in costs of transportation, and providing the people with many things before impossible for their use. The Government of Venezuela is putting forth special efforts to maintain this highway in first-class condition at all times, because of the impetus it has given to commerce in general throughout the nation, and particularly to the merchants of the Cordilleras.

Building to Develop Commerce

The five main classes which are being emphasized in the building of the West-Coast South American links of the international highway are:

1. Roads giving access to consuming centers or between consuming centers
2. Roads giving access to railroad centers
3. Roads giving access to ports
4. Longitudinal highways
5. Highways inter-connecting with the longitudinal

Construction in Chile

At the opposite end of the international highway chain an American company is constructing the highway from Concepcion, Chile, to Talcahuano, the principal port of the province of Concepcion. This is only a short feeder road, 5.36 miles in length, costing $302,500. The highway is 38 feet wide, with a paved crown, 19 feet 8¼ inches in width, of Warrenite Bitulithic. On each side of the paved strip are macadam extensions 19.7 inches wide, treated with asphalt. Under the terms of the construction contract, the American firm has agreed to maintain the road for seven years at a cost of $11,495 for the first three years, starting two years after the highway is completed; and approximately $3,000 per year for the remaining two. The construction of this international highway should be an object lesson to road builders all over the world. No more difficult construction problem could be found anywhere than that encountered in the mountainous sections of each of the countries through which it passes.

At the present time there are thirteen highway projects under construction in Chile, with forty-four others under study. British, American and Chilean firms are all engaged in the work, while that pertaining to streets in the cities is mostly in the hands of German firms. The largest highway program ever attempted in Chile is now in progress, and it promises on completion to step the nation forward as a new empire of opportunity. Contracts for 605 miles of new roads to cost $5,013,095 were awarded by Chile in 1928, and it is estimated that $2,696,122 of this sum was required for completed construction during 1929. In addition, a second contract for 374 miles was awarded in 1929, costing $5,373,126, over one-third of which was completed this year. This construction has been classified as follows:

171.5 miles of natural earth road
187.9 miles of graveled road
91.3 miles of road from refuse of nitrate plants
54.1 miles of graveled and crushed stone road
17.8 miles of surface-treated graveled road
6.2 miles of bituminous macadam road
20.6 miles of cement-concrete road
5.4 miles of Warrenite Bitulithic road
50.5 miles of reinforced concrete road

This assortment of road types was made after a careful study of potential traffic conditions which would have to be met during the next three to five years, but in each case the surveys have been made with a view toward eventual macadamization or concreting of the main sections.

Reinforced concrete is being used on the Valparaiso to Casablanca, on the Santiago to Bernardo, and on the Vinar del Mar to Concon highways. There are a number of streams which have to be crossed, requiring a total of 44 bridges, and in the later studies they are considering many more bridges over streams which cannot be forded during

PREPARING A BOULEVARD NEAR RIO JANEIRO, BRAZIL, WHICH WILL CONNECT WITH THE PAN-AMERICAN HIGHWAY

the season of heavy rains.

Peru Pushing Road Campaign

The highway campaign in Peru is also very extensive at present, and splendid progress is being made on the coast highway running the full length of the country from Tumbes on the north to the border of Tacna on the south. This highway is 1,300 miles in length and is now open for traffic over its entirety. Several bridges must still be constructed across streams which become impassable in the rainy season, and it is conservatively estimated that two years hence it will be the equal of any main highway in the United States.

Motor transportation along the desert coast of Peru, which has long been a dream, has become a reality, and is regarded as a crowning achievement by the people. Valleys which have been isolated for centuries are now within a few days or hours of one another, and inter-city bus service has already been started. As one of the links in the vast highway chain of South America, the roads of Peru are playing a tremendous part. Ancon, the favorite resort of Lima society, is now being connected to the capital by a modern toll highway. This road is 5 meters wide, with a maximum grade of 4 per cent and a minimum curve radius of 50 meters. It is of rock construction surfaced with asphalt and has been constructed by a prominent Peruvian as a private enterprise, with a concession to operate it for twenty years as a toll road, at the end of which time it will revert to the Government. This is a very praiseworthy undertaking, because the Peruvian road funds are being heavily taxed for main highway construction, and it would have been several years before the Government could have undertaken it.

Costs High in Mountainous Sections

On account of the mountainous character of vast portions of Peru's territory, this nation has greater costs and road construction difficulties than several of the others. The normal roads for the present are being leveled but not metaled. Lima, Callao, and the coast cities are being connected by fully paved highways, as these are part of the international chain. Some portions of the highways are at an altitude of 12,000 feet above sea-level, where construction is exceedingly difficult and costly, and where it must be perfectly done to withstand the weather and to provide open clearance at unseasonable motor periods. At present there are about 13,000 motor cars, trucks and busses in use in Peru, and with the highway progress the demand is constantly growing. Peru planned to spend $1,220,000 on road construction during 1929, in addition to the labor done under the antiquated system of "head taxing" or citizen conscription, and plus the amount received from the 1929 gasoline taxes. Americans residing in the country are exempt from conscription, but each one must pay a registration tax of 40 cents, which goes toward the road fund, while Peruvians who wish to avoid the labor must pay the equivalent of six days' labor in cash.

1929 Saw Big Step Ahead in Colombia

Heretofore in Colombia, good roads have been scarce, except around Bogota, the capital. The year 1929 ushered in a new era, and extensive highway construction is now under way. All roads are being built for the future, with the idea of their being used by heavy motor traffic. This is making for a fine type of road, even though slower in mileage totals and increased in construction costs. The new Cambao Road, connecting the capital with the Magdalena River south of Beltran, is nearly completed. It makes a new pass through the mountains, and American highway engineers who have inspected it pronounce it an exceptional stretch of highway. The Gran Carretera del Norte, from the capital to the Venezuelan bor-

ROUTE OF THE PAN-AMERICAN HIGHWAY THROUGH THE AMERICAS

der, is the major highway in Colombia, and is part of the international chain. This road is now completed and is proving an impetus to commerce. A second trunk line is also under construction from Medellin to the Pacific to connect with other links of the International Highway.

During 1928 this little South American country spent $7,122,400 on new road construction. "The Carretera al Mar," as a highway, has been under discussion ever since the sixteenth century, but it was not until March, 1926, that its advocates succeeding in getting its construction authorized. The total cost of this one road has been $10,000,000, economically handled by an American engineering firm. The highway from Cali to the Pacific is another privately owned and constructed road. This section of Colombia's highway system is costing $3,430,000. In addition, the Department of Antioquia spent $2,257,057 for new construction in 1928, and $281,131 for highway maintenance.

OUR PAN-AMERICAN NEIGHBORS TO THE SOUTH ARE BUILDING THEIR ROADS FOR THE FUTURE

This shows a scene south of Mexico City

Bolivia Awakening

Bolivia's highways are now under construction and, while not a great deal of progress has been made in the past in comparison to the Pacific Coast nations, the country seems to have awakened to the tremendous gains it can make in commerce if proper roads are constructed for motor traffic. The Bolivian Federal Government spent $2,601,932 in 1929, and the various departments or states approximately $3,931,200 for new construction. These highways are so surveyed as to become connecting links between the great east and west coast chains of the continent.

Chile and Venezuela

The greatest ambition is being shown by the Chileans in their road programs, and they regard motor highways, their construction and maintenance, of more importance to national prosperity than railroad improvement. Chile's highways now total more than 30,000 miles, and under the country's ambitious plans more and more miles each year wil be macadamized or paved. The total expenditures of Chile and Venezuela for 1929 were almost on an equal basis, but the nation to the north will still be constructing highways to equal Chile's total long after the latter has completed its entire system.

Roads of Friendship

All of these highways, being part of the vast Pan-American chain, will in due course be interconnected with motor roads through Central America and Mexico into the United States. No greater tie of permanent friendship between nations and peoples could be conceived than this plan. They will become avenues of pleasure, commerce, profits and international brotherhood which will justify every cent of their cost and maintenance.

Juvenile Court Held an Antidote for Crime

"CONFIRMED criminals and gangsters may be eliminated or so reduced in number as to be a negligible quantity in American life, and millions of dollars may be saved taxpayers if each community is provided with a well-equipped juvenile court," according to a statement issued by Charles L. Chute, General Secretary of the National Probation Association, in a recent issue of the Association's Bulletin.

George W. Wickersham, Chairman of the National Committee on Law Observance and Enforcement, appointed by Mr. Hoover, is President of the National Probation Association.

"Every state in the Union except two," according to Mr. Chute, "has laws for juvenile courts, but there are still hundreds of cities and the majority of rural counties without juvenile courts or probation services. Studies made of confirmed criminals show that in nearly all cases their delinquencies started in youth. If communities established well-equipped juvenile courts, a great reduction in crime would follow. If crime can be treated promptly and intelligently when it first appears, we shall have found the remedy for the so-called 'crime wave' in our country.

"Juvenile courts in the United States having the complete facilities for the treatment of delinquency and crime can be counted on the fingers of two hands. The National Probation Association, after years of studying court work in every section of the country, has laid down seven standards for progressive juvenile court work. We are asking each community to measure its juvenile court facilities impartially and without conceit by these standards and to aid in the reduction of delinquency and crime in our country, by providing their courts with the services they now lack."

The seven standards drawn up by the association to insure adequate treatment of delinquency and of youthful offenders are:

(1) A judge chosen because of his special qualifications. Besides legal training he should have an understanding of social problems, particularly those involving children and parents and a sympathetic understanding of child psychology.

(2) Private, informal court hearings. No police court hearings for children.

(3) Authority to deal with parents and the exclusive right to hear cases of children needing court care. No child should be tried in a court for adult criminals.

(4) Experienced, trained probation officers who have the resourcefulness and sympathy to handle children. Graduates from college or from a school of social work are preferred. Experience in child welfare work is indispensable. There should be enough probation officers, both men and women, to do thorough work; men to deal with older boys, and women to deal with girls. No probation officer should have to supervise more than fifty children at a time.

(5) A good record system with adequate clerical help.

(6) Facilities for physical examinations and for mental study of problem children.

(7) A well-equipped detention home or good family boarding homes for the temporary care of children.

"If these standards are not complied with in the juvenile courts of each community," states the Bulletin of the National Probation Association, "then these communities are adding more than their share to the unenviable crime total of our country."

When and Where Should Warning or Regulating Traffic Devices Be Installed?

And to What Extent Are Traffic Officers Needed Also?

THAT the time has come when the "rule of thumb" method of determining the type or character of warning or regulating devices for the control of vehicles at street intersections should be a thing of the past, is emphasized in a Sub-Committee Report on Traffic Signals and Signs, presented at the 1930 Convention at Atlantic City, of the American Road Builders' Association. This report to the City Officials' Division of the Association is summarized by the Sub-Committee Chairman, William S. Canning, Engineering Director, Keystone Automobile Club, Philadelphia, as follows:

I

Warning signs should be used at unusual conditions of street layout or in outlying communities in advance of widely separated intersections, hospitals, schools, playgrounds and so forth.

II

Danger Signs should be used where the hazard is positive, and should be illuminated at night by reflecting devices, street lights or floodlights.

(a) Reflecting devices should be more generally used to emphasize at night-time a danger sign or a "Stop" sign

(b) Pavement markings are recommended for use in the control of traffic lanes at intersections, and as advance warnings to major intersections or railroad grade crossings.

III

Flashing beacons are recommended for use where the hazard is permanent, to align traffic and as indications of a condition requiring reduction in speed.

IV

"Stop" signs are recommended for the protection of high-speed arterial highways where the volume of traffic on the intersecting street falls below 25 per cent of the volume of traffic on the through highway.

V

Isolated automatic lights are justified under certain conditions to insure pedestrian safety and to control isolated intersections where the volume of traffic approximates 1,200 vehicles per maximum hour with at least 25 per cent of the total on the lighter-traveled street.

(a) Traffic demand signals are considered for isolated intersections (not planned for inclusion in a general system at some later date) where the traffic flow on the intersecting streets is irregular, the signals being actuated by the movement of vehicles toward the intersection, and proportioning the "Go" time directly to the number of vehicles which approach the intersection from any direction.

VI

Traffic officers.—Except in special cases it is deemed undesirable that traffic officers be continued at localities where signals are in operation, because frequently more attention is paid by the vehicle operator to the officer than to the signal.

(a) **Semaphores.** — Manual operation of semaphores by traffic officers is deemed undesirable because of the tendency to make the officer mechanical and destroy his flexibility by fixing him in a given location.

(b) **Hand signals.**—A traffic officer, when stationed at locations where street car or other turning movement is heavy, in conjunction with signals or without, can most effectively supervise traffic movement by hand or arm signals, provided these signals are definite and that all the officers are carefully trained in a uniform code of hand signals.

VII

Complete automatic signalization.—Based upon the volumes of traffic previously set out, complete automatic signalization of the "limited progressive" or, preferably, the "flexible progressive" type should be installed where it is desirable to properly coordinate the movement of traffic over a wide number of immediate adjacent intersections.

Signals, or Traffic Officers, or Both?

The report, copies of which are obtainable from the American Road Builders' Association, National Press Building, Washington, D. C., discusses the practical application of the several findings summarized above. The committee's recommendations regarding one of the most controversial of these findings —that on traffic officers—are here quoted in full:

"VI. **Traffic Officers.**—There has been much discussion regarding the use of traffic officers. One thought is that the police officer can control an intersection better than any form of automatic device, he being able to take advantage of groups in traffic and weave the turning vehicles through. There are several objections to this point of view. One is the natural fatigue of the officer during the long hours of heavy traffic duty. Another is the impossibility of his coordinating his efforts with those of other officers at the four surrounding intersections. Perhaps a highly trained and thoroughly competent officer can control his own intersection with the maximum degree of safety and speed, but a heavily traversed intersection is likely to be one of a group or series of points where a properly timed and coordinated system of traffic signals should be used.

"Traffic officers are frequently used at signalized intersections to aid in controlling and directing traffic movement. They may be used at intermediate intersections between signals which are placed at intervals of several blocks. As a general thing, however, it is recommended that traffic officers be not placed at intersections controlled by signals, except where there is a heavy turning movement of street cars, for the reason that if an officer is stationed at a signalized intersection there is the tendency for vehicle operators to pay more attention to the officer than to the signal, with confusion and some delay resulting.

"Traffic officers should be used at intersections where, because of unusual conditions such as heavy turning movement, switching of street cars, and so forth, automatic signals could not operate successfully. They should be placed also at such intersections where at certain hours of the day the accident hazard is great because of heavy pedestrian movement, particularly at school crossings.

"(a) **Semaphores.**—Manual operation of semaphores by traffic officers is of doubtful value, as the officer is affixed to a certain spot on the street, whereas his chief value is in his flexibility and mobility. In most cities their use is discouraged or forbidden, the general opinion being that they tend to make the officer mechanical, lazy or careless. There is a general tendency to the opinion that with proper signalization the function of the officer is not to direct traffic, but is to supervise its movement and enforce the injunctions of the signals.

(b) **Hand signals.** — Several localities (Washington, San Francisco and others) employ traffic officers using either hand signals or semaphores at intersections where the necessity for control occurs during only a few hours of the day, such as school crossings, theaters, ball parks, and so forth, being governed by the cost to the community of this type of vehicular control. When the cost of officer control approaches or exceeds the maintenance cost of automatic signals, then expenditure for automatic signals is considered to be justified. If there is necessity for traffic control during at least eight to ten hours a day, the added visibility and efficiency afforded by a manual or automatic operated signal will warrant its installation. In addition, the hazard to the individual officers forced to control traffic

from the middle of the streets will be eliminated.

"Traffic officers should be carefully trained in the uniform use of a definite system of hand and arm signals. The signals of an officer should be so positive and unmistakable that no doubt of their meanings can arise in the minds of vehicle operators."

When "Stop and Go" Signals Are Needed

The committee's recommendations, as summarized in Sections V and VIII of the report, are based on "vehicles per maximum hour," and differ considerably from the new Massachusetts code,* from which the committee also quotes in its report. Under the heading, "Complete Automatic Signalization," the report says:

"VII. It is probable that this paragraph should be headed 'Complete Coordinated Signalization for Progressive Movement.' Any signals installed should provide ultimately for a gridiron or progressively timed signaled route rather than a collection of isolated controlled intersections. Completely coordinated signalization should be used when it is desired to place traffic in an orderly procession and eliminate a long number of unwarranted stops. Such a system is used most effectively where the maximum of efficiency of a series of streets, together with safety and a reasonable rate of speed, must be obtained. When such a system is installed, there should be a minimum of interference with the operation thereof. In general, no location should be included in the system which does not have an average flow of 800 vehicles through the intersection between the hours of 8 a.m. and 6 p.m.

"The statements giving various minimum standards for the use of signal installations are merely general and are offered primarily for the purpose of arousing discussion. So far, a very low minimum standard has been advanced, merely to indicate a basis below which signals surely are not warranted, but not necessarily above which signals are warranted. The figures set out in this discussion are not necessarily given as our best thought. The significant thing about all of this is that careful research is needed.

Engineering Advice Essential

"Too much emphasis cannot be placed upon the necessity for adequate engineering study and analysis, as in the past too little attention has been given to the scientific needs of all characters of traffic control devices and too much emphasis has been placed upon political expediency."

* See THE AMERICAN CITY for November, 1929, pages 90-93.

An Indiana Drilled-Well Water-Supply

Abandoned Gas Well Developed Original Water-Supply in 1894

By

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IN 1894 a prospecting company in Columbia City drilled an 8-inch well to a depth of 679 feet for gas. At this point the drill was lost and the well was abandoned. Another 8-inch well was drilled nearby to a depth of 1,900 feet. This well proved a failure for gas, but developed into a flowing well of a pure, wholesome water and continued to flow until 1898. As there was a distinct need of a water system in the city, a group of citizens, with the municipal officials, started a movement for the creation of a city waterworks.

The First Water System

Ground was purchased, consulting engineers were employed, and plans worked out, so that on June 6, 1894, a contract was let for two horizontal boilers, 54 inches in diameter and 16 feet long, two Worthington steam pumps of 1,000,000 gallons capacity per day, an 8-inch well cased to rock, 16,218 feet of various sizes of water pipe, and 72 hydrants with valves and fittings. This work was awarded for $25,960 and was completely installed by October of the same year. By the end of 1895 there were 246 taps in the water-main.

From 1895 to 1907, 16,139 feet of 6-inch pipe, 8,800 feet of 4-inch pipe, 734 feet of 1-inch galvanized service pipe, 37 feet of 1½-inch and 300 feet of 2-inch galvanized service pipe, together with seventeen hydrants and two 10-inch wells, had been added to the equipment.

The two new wells were driven to depths of 287 and 515 feet respectively on the south side of the plant and were cased to rock. At the end of 1907 there were 89 fire-hydrants and 365 service taps in the mains.

Improvements Made from Revenue Since 1907

In 1907 the outstanding bonds were $16,000, with a balance of $1,563.97 in the treasury. Since 1907, this indebtedness has been paid off and extensive improvements have been made, all out of the earnings of the water-plant. The two original boilers were removed and steam connections made to the electric plant boilers. In 1909, the two Worthington steam pumps were taken to Fort Wayne and were thoroughly overhauled, and they are in constant use at the present time. In the fall of 1909, an 8-inch well was drilled to a depth of 437 feet and cased to rock. This well is located between the river and the present spray pond of the plant and is pumped every day. Several additional wells have been drilled and added to the supply.

Brass or lead pipe is used for all service lines from the water-main to the customer's lot line, at which point the water meters are installed. All service lines from the dwellings to the water-mains are kept in repair by the property owners or consumers.

Care of Fire-Hydrants

Since 1907 there have been 35 valves placed ahead of fire-hydrants. This is essential when repairs are necessary. Without the valve between the hydrant and the water-main, it is necessary to deprive a large number of consumers of water, and it also hampers fire protection while the repair is being made. The valves have been placed as the dydrants needed repair. The hydrants are inspected every six months, usually in the spring and fall.

The Protection of Valves on Water-Mains

All valves on the water-mains in Columbia City are buried in the ground, and in case of a leak it is necessary to dig up the street to make the repair. A manhole should be constructed at all such valves to eliminate the necessity of digging up the street for each repair.

Insurance companies require inspection of all valves twice a year. This is an excellent requirement, for, by closing and opening the valves, not only is assurance given that the valves are working properly, but they are prevented from becoming corroded.

Water Meters

Since the improvement of the waterworks began, in 1907, a total of 960 water meters have been installed as follows:

897	⅝-inch meters
21	¾-inch meters
20	1-inch meters
6	1½-inch meters
14	2-inch meters
2	3-inch meters

There are still 132 consumers who are on the flat rate, making a total of 1,092 consumers. It is expected that all flat-rate consumers will be metered before the end of 1930.

The water meters are installed outside at the tree line, as mentioned before. This is a great help, for it is necessary to make but one trip to read the meter, as there is not the bugaboo of a house being closed. Another advantage is that there is no interference with the consumer.

The water meters are read twice a year, in January and July. Following is the meter water-rate and the minimum charge for meters, according to size:

No. of Gals.	Charge per 1,000
First 10,000	30c
Next 10,000	25c
Next 10,000	20c
" 10,000	15c
" 10,000	10c
" 50,000	9c
Over 100,000	8c

Size of Meter	Minimum Charge per Month
⅝" and ¾"	$0.50
1"	1.00
1½"	2.00
2"	4.00
3"	8.00
4"	16.00

Property owners or consumers are held responsible for the condition of the meter. If it is damaged by hot water flowing back into the meter or has been tampered with, the property owner or consumer must pay for the repair. If the meter is damaged by freezing or any other natural cause, the city makes the necessary repair without charge to the consumer. All consumers having hot and cold water connections should be required to place a check-valve between the furnace and the water line. This eliminates any danger of hot water's getting back into the meter.

Some Complaints of Warm Water in Summer

Some consumers ask, "Why is the water so warm in the summertime in our houses?" This is due to the fact that in former years, before there were many streets paved, the water-mains were laid 4 feet 6 inches deep. No consideration was given to the possibility of grading the streets. Consequently, when the streets were paved and it was necessary to cut them down in many places as much as 18 inches to 2 feet, the mains were left approximately 2½ feet below the hot surface of the pavement. All mains are now laid 5 feet 6 inches in depth, so that when the streets are paved, they are still 4½ feet below the surface.

The present water-works system is operated by direct pressure, having no reserve supply in the way of a standpipe, elevated tank or reservoir. If such a reserve supply could be completed, the cost of pumping would be reduced about one-half.

Fire Apparatus and Equipment Worth Buying Is Worth Caring For

By O. J. SWANDER
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THE proper care and maintenance of fire apparatus and equipment is one of the most important duties of the fire department. A department cannot operate efficiently at fires unless apparatus and equipment are in perfect condition. The failure of a pumping-engine, a ladder truck, or even of a length of hose, may cause thousands of dollars' worth of damage and possible loss of life.

Proper care of fire apparatus and equipment not only increases the efficiency of the fire department but also reduces the expense of maintaining the department. Hose that is properly dried and cared for will last several times as long as hose that is put away wet and muddy. Properly cared-for apparatus will serve longer and require less repair than equipment that does not receive proper attention.

Systematic Inspection

Some systematic method of inspection is necessary. In a small volunteer department, weekly inspections may be sufficient, but in the larger departments, apparatus should be inspected daily. One volunteer department in Kansas has a form printed, and two members are named each week to inspect the apparatus and fill in the blanks on the form. These members each receive a small compensation for making this inspection. The form is similar to that suggested in the accompanying box.

More detailed inspections are necessary semi-annually or annually. At such times, a thorough inspection of the motor, brakes, ignition system, carburetor, body, paint, steering gear, and other parts is necessary. The expense for repairs can be greatly reduced if the department has a well-equipped repair shop. Most departments have members who are expert mechanics, carpenters, or painters, and almost any repair job can be done if a well-equipped repair shop is available.

When pumping-engines are in service in the fire department, these should be tested annually in accordance with the requirements of the National Board of Fire Underwriters. Experience has shown that where regular and systematic tests of engines are not made, defects often exist unsuspected until they show up at a large fire where the apparatus is called upon to deliver its full capacity.

Inspection Report of Apparatus

Company..... No.....
Make..... Model.....
Manufacturers No.....
Report of Condition of Apparatus ..... 19....

1. Is radiator full?
2. Is anti-freeze required?
3. Is fan belt tight?
4. Is water hose in good condition?
5. Are all water joints tight?
6. Does radiator leak?
7. Does carburetor flood or drip?
8. Is oil in crankcase up to level?
9. Should oil be changed?
10. Give date of last change of oil.
11. Does oil pressure gage work?
12. Have transmission and rear axles sufficient oil? Give date last changed.
13. Does clutch brake work properly?
14. Does emergency brake work properly?
15. Does gear shift work properly?
16. What is condition of tires? Air pressure in each?
17. Does starter work properly?
18. Has battery sufficient water?
19. What does each cell test?
20. What is condition of lighting system?

The Use of High-Grade Oil

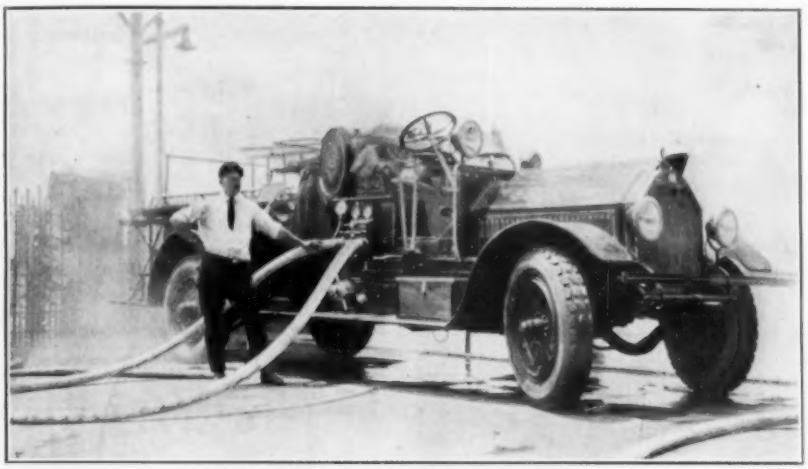
One of the most important factors in the proper care of fire apparatus

correct lubrication. The use of cheap oils should not be tolerated; only high-grade oils made by a manufacturer who has an established reputation for quality are fit for fire service.

Fully as important as selecting oil suitable to the requirements is the use of the oil in the proper manner. For example, only clean containers and measures should be used, and the oil should be carefully handled to avoid contamination. A bit of lint or grit may clog the oil screen and cause bearing failure.

Engine crankcases should be drained at regular intervals and filled with fresh oil. The oil in service gradually becomes contaminated with particles of dust, grit, bits of worn metal, and finely divided carbon. In addition, thinning of oil by unvaporized fuel takes place, thus reducing the lubricating properties of the oil.

A PITOT GAGE MEASURING FIRE-HOSE DISCHARGE



THE ANNUAL TEST OF A PUMPING-ENGINE

This thinning of the oil is aggravated by the practice of some departments of house running of apparatus two or three times a day for brief periods. This is the greatest single source of dilution in fire department service. This practice has no practical value and should be discontinued.

The analysis of the oil in the following table shows the per cent of fuel accumulated from 21 starts of an engine in a warm fire-house. The piece was not out once on a run, but the oil was considerably reduced in value by a week of house running practice. Such dilution promotes wear because the thinning of the oil permits the working surfaces to come much closer together.

The results of one week's fire-house running:

	New Oil	Used Oil
Specific gravity	9.30	.923
Flash	380 F.	230 F.
Fire	420 F.	245 F.
Pour test	25 F.	Below zero
Viscosity at 210 F	58 seconds	47 seconds
Fuel		10.1%
Foreign material		.1%
Water		Trace

The Care of Hose and Other Equipment

Another item to be considered is the proper care of fire-hose. Good hose is expensive, and it pays to care for the hose to get the longest life from it, thereby reducing the expense. When hose is wet or muddy, it should be removed from the reels or wagons, the mud brushed off, and the hose hung in a tower or placed on a rack to dry. Heat is injurious to rubber, and hose should not be dried on hot sidewalks or pavements. Hose in towers or on drying racks should be protected from the rays of the sun. When hose is stored in a dry place, it should have water passed through it monthly.

It is important to take care at fires that hose is not dragged over floors on which acid has been spilled. When discharging or re-charging chemical engines or extinguishers, the solution should not come in contact with the hose. If gasoline is spilled on hose, the rubber will separate from the fabric and ultimately cause the hose to burst.

The care and use of minor equipment should receive attention, too. Ladders should be varnished frequently, pulleys oiled, and ropes replaced when necessary. Ladders should not be dropped or otherwise roughly handled. Axes, picks, pike poles, and pitchforks should be inspected frequently to insure that heads are fastened securely to handles.

It can be seen by the foregoing that the proper care and maintenance of fire apparatus and equipment is no small task. Even in a small fire department with only one piece of apparatus considerable work is necessary. The effort, however, will be well spent when the increased efficiency of the fire department and the increased reliability of the equipment are considered.

Chicago's Notable Park and Boulevard System a Product of Gradual Growth

THE park system of Chicago comprises 7,470 acres of land, and 203 miles of boulevards. These park figures include all public recreation areas in the city's 20 park districts, whether under administration of Park district officials; of the Bureau of Parks, Department of Public Works; of the Forest Preserve Commissioners of Cook County; or of the Board of Education. The South Park District alone comprises 2,799 acres, and 1,378 acres of the Cook County Forest Preserve lie within the city limits.

This acreage represents results of regular land acquisition since about 1870, in which year the total of recreation land holdings became 1,887 acres. In 1868, this total was only 125.93 acres. Even that figure must have loomed large to Chicagoans of increasing park-mindedness, aware that the total in 1860 was 37 acres, in 1850, 11 acres, and in 1839, two acres.

Today, the South Park District alone has over 119 miles of boulevards, including over 67 miles of beautifully developed park drives.

Westborough Town Hall

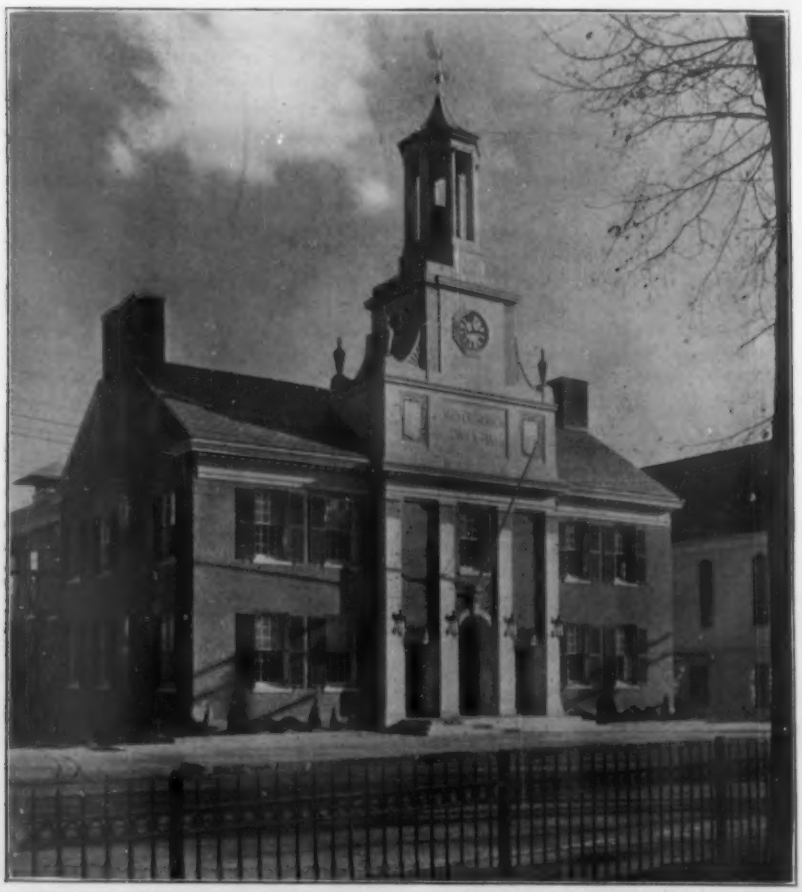
By WILLIAM ROGER GREELEY
KILHAM, HOPKINS AND GREELEY, BOSTON

THIS building has been designed to solve the problem faced by many towns, of using an old and rather narrow lot for a new and larger municipal building. It is designed along Colonial lines as far as plan and proportion are concerned, but is detailed in the Modernistic mode.

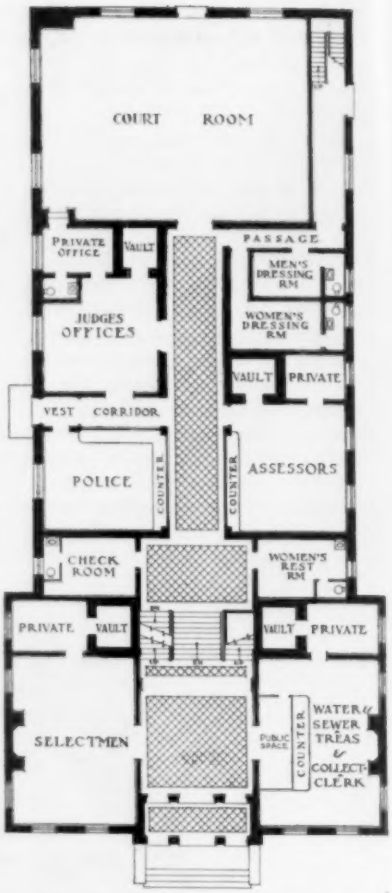
It provides the hall required in every New England town for town meetings, at which officers are chosen by direct vote of the people. In addition, it provides the county court room, and a large suite of rooms for the American Legion and other patriotic organizations. It gives the most direct access possible to both offices and auditorium, by a mezzanine arrangement. Upon entering the main lobby, one faces the office corridor, half a flight below, and balanced stairways lead up a half-story to the foyer of the hall. Arrangement of ground floor and first floor space is made clear by the plans. The Police Department is self-contained, and is entered exclusively from the outside. The auditorium has a balcony, and rear below-stage dressing-rooms. At the entrance are checkrooms and toilets; at a lower level an attractive rest room for women.

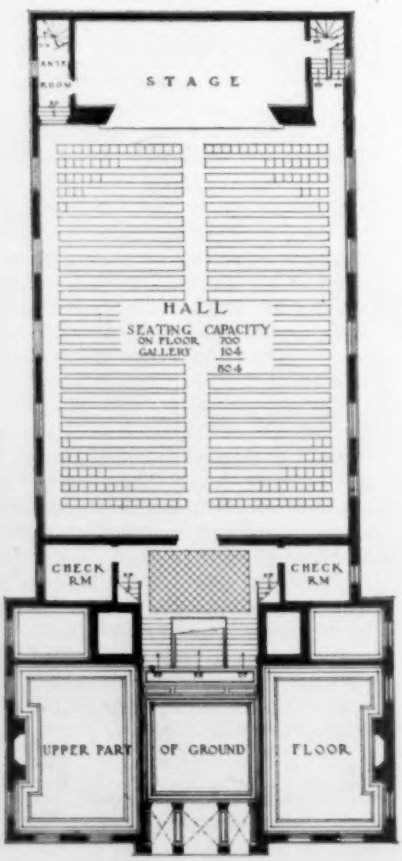
The main stair hall leads up to the hall balcony and the Patriotic Room, which occupies the entire front of the top floor, and has anterooms, toilets, and a kitchenette. In spite of the narrowness of the lot, a generous parking area has been provided in connection with the building, partly through citizen effort.

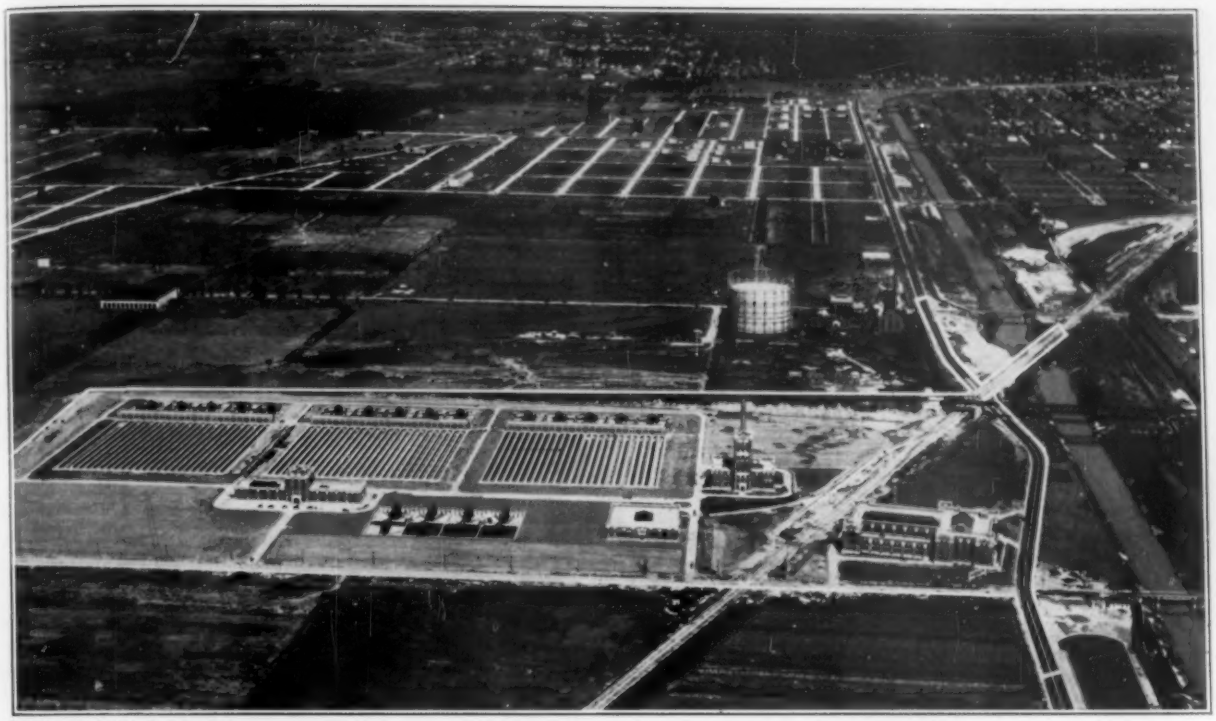
There is great difference between the design of this building and the normal Colonial. The general construction conforms to the best traditions of New England building design, and red brick with stone and wood trimmings appropriate to such design has been used for the exterior. But social conditions and styles are in evolution. Craftsmanship and shopwork that prevail today are wholly unlike those of the past. Hence the newer and crisper treatment here observable. It has been the aim of the architects, while preserving the atmosphere of the Colonial town, to mark the progress of time and the evolution of taste by their treatment of the details. In this new interpretation of a traditional style lies the building's claim to distinction.



THE EXTERIOR IS OF RED BRICK, WOOD TRIMMED, THE BELL AND CLOCK TOWER OF WOOD. THE TOTAL COST, INCLUDING FURNISHINGS, WAS UNDER $150,000







© Chicago Aerial Survey Co.

AIRPLANE VIEW OF THE NORTH SIDE SEWAGE TREATMENT WORKS, CHICAGO

Electric Control in Sewage Disposal

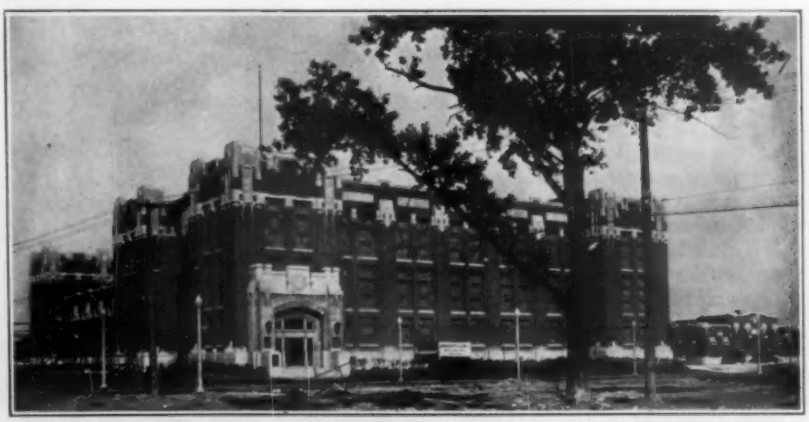
By L. J. CISSNA

THE world's largest sewage treatment plant of its kind was officially opened on October 3, 1928. This plant, known as the North Side sewage treatment works, is located just outside the Chicago city limits, and was built and is operated by the Sanitary District of Chicago. The entire plant is electrically operated, the energy being supplied by the Lockport power-house of the Sanitary District electrical system and the Public Service Co. of Northern Illinois.

Method of Treatment

The activated sludge method of sewage treatment is used, and the plant is arranged to take care of the requirements of an initial population of 830,000 people. It serves the entire region from Fullerton Avenue north to the Cook County line, and is to be expanded to treat ultimately the sewage of a population of about 1,500,000 people, which it is estimated will be reached by 1960.

The plant, which will eventually occupy an entire site of 100 acres, is shown in the airplane view. Exclusive of the treatment tanks which occupy most of the site, it consists of five conveniently grouped buildings. These are the main building, pump and blower house, operating galleries, service building and outdoor electrical substation. In addition, there are twelve grit chambers, eight preliminary settling tanks, and three batteries of aeration and final settling tanks. All the buildings have been constructed in accordance with an attractive architectural plan.



ATTRACTIVE ARCHITECTURAL TREATMENT OF THE PUMP AND BLOWER HOUSE

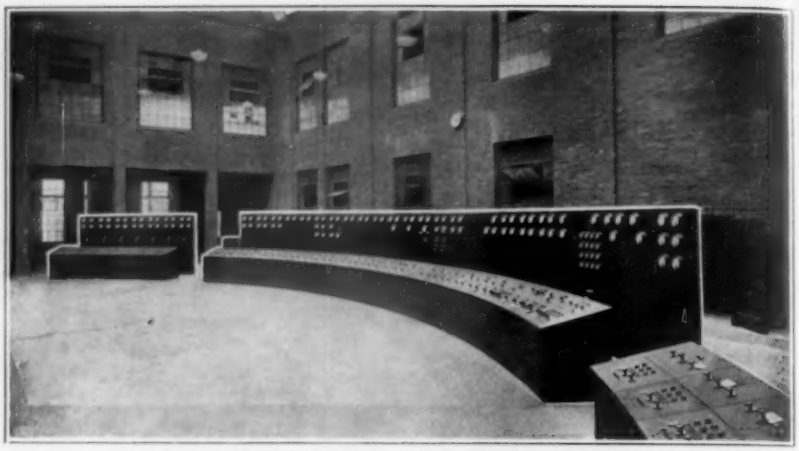
The unique nature of the unit interlock control system is of special interest, as, instead of being composed of the ordinary electrical control equipment, it makes use of standard apparatus developed for telephone exchanges. This apparatus consists of selector switches and relays of the type which has been used as standard equipment in telephone practice for many years. The use of telephone apparatus gives a very simple arrangement of parts and allows a compact assembly of each control unit on a small frame supported under each control panel and enclosed by a dust-proof metal cover.

This installation well illustrates the application of electric control and power to the modern methods of sewage disposal. The use of telephone apparatus for such a purpose is new and novel, and has economically solved a problem which would have been very involved

and expensive if ordinary methods of control had been applied.

The sewage is brought to the treatment plant by intercepting sewers from both the north and the south, and is lifted 44 feet at the pump and blower house so that it may pass through the remainder of the plant by gravity. First, the street grit is removed in the grit chambers, and the coarser solids, oil and grease in the preliminary settling tanks. After passing through the preliminary stages, the sewage goes to the aeration tanks, 36 in number, where the actual purification process takes place. Here it is blown with compressed air supplied from the pump and blower house for about six hours, in contact with the aerated sewage solids, or, as it is technically called, "activated sludge."

There are three batteries of aeration tanks with twelve tanks, each divided into two parts by a longitudinal baffle wall in each battery, and each tank is



THE HEART OF THE ELECTRIC CONTROL SYSTEM

THE FIVE CENTRIFUGAL PUMPS WHICH LIFT THE RAW SEWAGE TO THE PLANT

420 feet long. The double line of white, wafer-like plates at the bottom of the aeration tanks are Filtros plates, a porous substance through which the compressed air is diffused to aerate and agitate the sewage. The air blown up through the Filtros plates causes the sewage to take on the appearance of boiling water.

Disposal of Sludge

After the period of aeration, the solids are removed in the final settling tanks, and the clear effluent is discharged into the Sanitary District North Shore channel, which empties into the Chicago River. The aerated solids, or activated sludge, are returned to the main building, where they are pumped back and mixed with the raw, incoming sewage entering the aeration tanks, to be used over again in the process of treatment. The excess solids, together with the solids removed by the preliminary tanks, are pumped to the West Side sewage treatment works 17 miles away, for disposal by digestion, drying and dumping. The average capacity of the initial installation is 175 million gallons daily.

Complete Electric Control

The entire plant is electrically operated, all electrical equipment being furnished by the Westinghouse Electric & Mfg. Co. The electrical power is supplied from two 15,000-kva. transformer banks, one of which is a spare, stepping down 33,000 volts to 6,600 volts. The heart of the electrical system is the main operating room. Here is located one of the largest control benchboards ever constructed and a switchboard comprising 44 panels. This control board covers one-third of the periphery of a circle 110 feet in diameter. All the electrical feeders and the main plant equipment are remotely controlled from this board.

A portion of the control board is used to control the five centrifugal pumps which lift the raw sewage into the plant. These pumps are driven by direct-connected motors, two of which are rated 1,000 horsepower each, and three 700 horsepower each. In addition, there are seven turbo-type blowers which compress the 250,000 cubic feet of free air per minute to a pressure of about 8 pounds per square inch, which is required to aerate and agitate the sewage in the aeration tanks. Three of these blowers are rated at 30,000 cubic feet per minute and are driven by 1,650-horsepower motors; the four others deliver 40,000 cubic feet per minute and use 2,160-horsepower motors. The pump and blower equipment and the main control room are housed in the pump and blower house.

Unit Interlock Control for Motors Simplifies Starting

The main electrical equipment consists of the pump and blower equipment, and the method used for controlling this apparatus is an innovation in the electrical control field. The large size of the twelve pump and blower motors requires five positions of the control to start them from rest to full speed; that is, the operating voltage must be ap-

INTERIOR OF AERATION TANK

plied in steps starting with a comparatively low value, and then increased as the motors accelerate in speed until they are finally connected across the line at full operating voltage. Since there were twelve motors, and since the usual practice is to use a separate starting equipment for each motor, it seemed at first that a large amount of costly starting equipment and an intricate control system would be required to properly operate this apparatus. This problem, however, was solved by the development of a new type of control, now known as the unit interlock control.

The unit interlock control system provides a scheme whereby any one of two common starting equipments may be selectively connected from and to any one of the twelve motors for starting purposes. The simplicity of this control scheme allows the use of a minimum number of wires between the control panels and the motors and their associated common starting equipment. Each motor is supplied with a separate unit interlock control panel mounted on the front half of the table part of the control benchboard.

The unit interlock control is entirely self-contained and so mounted that each control section can easily be removed from the control benchboard for inspection and maintenance purposes and a spare unit inserted in place in less than five minutes, by one operator. Normally, the spare unit is mounted upon a desk where the entire sequence may be demonstrated or checked. This arrangement allows each control unit to be interchangeable with any of the other control units.

Americanization and Street Cleaning

A Commissioner of Public Works Makes a Noteworthy Point of the Value of Clean Streets in Aiding American Cities to Assimilate the Foreign-born Population

ASIDE from the apparent need for clean thoroughfares from the standpoints of health, appearance and sanitation, the business of cleaning streets goes deeper and has greater significance than many are inclined to note. It is one of the greatest factors in our general program of Americanization. It has a refining and bettering influence which cannot be overlooked.

This was the substance of an opinion given *The Street Cleaner* recently by a well-known Commissioner of Public Works. This Commissioner lives in a city of about 75,000 which includes a goodly percentage of foreign-born.

In discussing street cleaning, the Commissioner declared that he had noted that when a municipality sets the example, citizens are not long in following suit. "In our city," he is credited with saying, "and in many cities, there is quite a percentage of residents who were not accustomed to clean thoroughfares and truly helpful surroundings in earlier days. They had been accustomed to littered streets, disordered yards and homes. Neatness, orderliness and cleanliness had not been in the picture for them."

When the City Leads, the Citizens Are Glad to Follow

It has been found by this Commissioner that when the city fixes up the streets in the neighborhoods where these foreign-born citizens live, and follows up this improvement with regular and systematic cleaning, results soon begin to show. The residents take a hint from these operations. They slick up and clean up about their places. In the meantime the next generation is rubbing elbows with young folks from other parts of town. They see and hear how others live and prosper, the word goes back, and soon one sees a very definite attempt to make what has been a poorer section reach the standard of the so-called better sections.

Street Cleaning Is Americanization Work

The Commissioner said, "To my mind, then, street cleaning can be regarded as Americanization work. It goes hand in hand with the efforts made to teach our language, our customs, our laws and our ideals. It teaches people who have not had advantages that others enjoy, to make more of their homes, to make their home sections better places in which to live. And when you have better places for young folks to live in, you cut down the tendency toward crime and disorder, all of which means that oncoming citizens are better Americans."

Assessable Values Increase

Then there is the money angle. In many instances, dwellings in the poorer sections are owned by people who have moved elsewhere or are holding them as investments. The improvement started by street cleaning and the example set by the city serves to enhance the value of the property.

Cleaning city streets not only has a distinct psychological effect, but also an important practical effect. Where real progress is sought, where better homes, business and citizens are wanted, street cleaning must not be regarded lightly. It is one of the most important factors of municipal life

More Isles of Safety for Pedestrians Advocated by Motor Vehicle Commissioner in Connecticut

THE construction of a series of safety isles for pedestrians across certain unusually wide streets or at irregular intersections is suggested by Robbins B. Stoeckel, Commissioner of the Motor Vehicles Department of the State of Connecticut.

Commissioner Stoeckel describes such a plan, which he has found effective in some European countries, in a bulletin on "The Pedestrian Question," issued by his Department in December. He says in discussing the idea:

"In some European countries, where there are many pedestrians and comparatively few motor vehicles, but where the motor vehicles run fast, it has been found possible to assist the pedestrians in crossing wide streets or at locations complicated by irregular intersections, by the installation of isles of safety. Often these isles of safety are so numerous or so arranged that pedestrians never have more than one lane of traffic to watch at a time.

"The installation of an isle of safety which is raised above the street level can hardly be recommended from the standpoint of the motor vehicle operator, however, unless it be adequately protected by warning signs so that he may know about it as an obstruction ahead. If that can be done, so that each operator will know in plenty of time that there are isles of safety ahead, driving through such places will not be too fast. Even a reckless man will slow down in such a place. The pedestrian then may cross safely. He watches his chance and when that chance occurs, goes through one lane, repeats at another lane, and so on until he is across the street.

"This method of crossing focuses his attention upon a single accomplishment. He has a distance of about eight feet to cross each time and only watches that much. Such aid in crossing can well be provided for some of our streets."

A Practical Program for the Protection and Development of Roadside Beauty

By RICHARD SCHERMERHORN, Jr.
CITY PLANNER AND LANDSCAPE ARCHITECT, NEW YORK CITY

THE science of roadside development is one of comparatively recent origin, and one that seems destined to become vastly important. It seems to me, however, that the increasing use of the term "highway beautification" is misleading, and that the term "protection of rural highways" would better express the idea implied. The old highways were in most cases naturally beautiful, but much of this beauty has been lost through the increased use of the automobile. The old Albany and Boston Post Roads, for instance, were particularly attractive routes of travel, but now the landscape bordering them is one continuous elongated scar.

Using the term "highway beautification" in the way that a good many highway officials and civic organizations are beginning to use it, and emphasizing the great benefit to be derived from the planting of trees, shrubs, and vines, is something like starting the job in the middle. Following are the successive steps, all essential, in my opinion, to the achievement of the result we all so heartily desire:

1. Legislation permitting all towns and villages to zone.
2. Consideration for all existing trees and other landscape features, and of the principles of landscape design in future surveys and plans for highway widenings.
3. Systematic planting of trees along highways.
4. Incidental planting of shrubs and vines (work to be organized by individual communities).

Legislation

(1) In New York State all towns and villages may have zoning commissions. They may zone the land along their highways if they choose to do so. Thus far, however, the towns have been backward in establishing zoning ordinances, especially the towns covering the rural districts. By legitimate zoning they may concentrate business structures and forbid the promiscuous scattering of gas stations, hot dog stands and commercial signs.

Studying Redesign

(2) Most highway widenings are planned by engineer officials, whose attention is largely confined to such details as straightening the right-of-way, eliminating bad curves and steep grades, and securing maximum economy based on engineering theory. Thus roadside trees are sacrificed indiscriminately. Steep, bare banks are created, which mar the roadside; and bridges, underpasses and other structures are designed from an engineering standpoint alone. It should be possible by the study of roadside topography and the acquirement of sufficient survey data to preserve much of the natural landscape growth, including attractive trees, shrubbery, etc. At least the lines of widening and the grades could be studied so that a minimum destruction of natural features would result.

In planning roadway embankments the steepest slope is now designed on account of economy of excavation and minimum right-of-way width, but I believe the questions of the wash on this slope and the resulting cost of maintenance are often disregarded. In other words, my view is that side slopes should be made flatter and that they should be covered with a thickness of top soil and that grass or some kind of vegetation should be established there. Naturally, this increases landscape beauty, but, aside from this, I believe a much less cost in maintenance would eventually result, and therefore a practical reason is developed for this class of treatment. Parkways of course are planned with the use of these principles, but I believe the same comparative procedure could also be economically employed on highways in general.

Highway structures such as bridges, culverts, underpasses, etc., should be designed by architects or landscape architects instead of engineers.

Whole-Course Planning

(3) It would be preferable if states or counties or similar controlling governmental divisions would establish their own organizations for systematic tree planting along highways, but, lacking such organization, there is no reason why the lesser units such as towns and villages, through their own authority or through the aid of local improvement associations, should not organize for systematic tree planting. This does not mean that tree planting is necessary throughout the entire route of the highway; in fact, such a procedure would not be according to the best principles of landscape design. It would be preferable to study carefully the characteristics of the course of the highway before any planting is done. Trees should of course be planted along bare stretches, especially where the adjoining landscape is inconsequential, but open spaces should always remain where the most attractive views in the far distance are encountered, and formal lines of trees should not be laid out where they would be interfering with natural rugged landscape. Where roads pass through forest areas, formal tree planting would also be out of place.

There are many practical considerations which require attention. Where the highway passes over low ground with insufficient drainage, naturally, tree planting should be omitted, as every soil-drying advantage is necessary. Along wind-swept areas tree planting is desirable as a protection. At sharp turns in the road, tree planting might constitute a danger. Along high embankments tree planting would provide a safeguard, and the use of guard fencing would be less compulsory. Along steep grades tree planting helps to prevent the extreme wash of road embankments and thus reduces road maintenance. Tree planting also reduces the growth of inflammable grasses and weeds.

Cooperative Effort

(4) The planting of roadsides for beauty in blossom and foliage is one of the finer details of the work in question. This must depend upon the efforts of individual communities, as its scope would be too great for any extensive individual authority. Of course, the ideal underlying such efforts is stimulating and should be encouraged, and undoubtedly much is possible through the interest of local village and town organizations. The vital success of all highway landscape improvement, however, lies in the formation of a basic landscape structure as outlined in the preceding paragraphs, and without the latter, efforts by local organizations are apt to have the least ultimate effect.

Propaganda for the protection of landscape beauty of roadsides therefore should be directed first toward the governing bodies which control the roads. It must be shown that a road department requires an additional unit in its organization, the aim of which shall be to study and control the landscape question. This unit might also use its influence in coordinating the activities of towns and villages through which the roads pass, in connection with the adoption of adequate zoning laws.

Cost Accounting Aids Municipal Administration in Minneapolis

How a Thoroughgoing System for Determining Unit and Total Costs of City Work Is Developing, on a Centralized Basis

By GUSTAVE A. MOE

COST ACCOUNTANT, CITY COMPTROLLER'S OFFICE, MINNEAPOLIS, MINN.

MOST departments of a city government are of such size as to make personal supervision by the executive impossible. The only practical way, therefore, by which an executive can judge the efficiency of municipal organization is through a system of periodic reports. These can be accurately obtained only through the operation of a good cost system.

Today new methods are being introduced and improved machinery installed in almost every branch of city government with a view to reducing costs either by elimination of waste or by increasing efficiency. It is impossible to judge whether the introduction of these new methods and machinery is likely to reduce costs unless the executive knows not only what his total cost is, but exactly what items make up the total. This information can be obtained through cost accounts.

In municipal procedure, budgets are used in operating departments and in constructing public improvements. These budgets are estimates made by the particular executive concerning the operations of his department; they are his standards. It is a good policy to analyze these budgets from a functional point of view, to ascertain whether further possible reduction can be made. This last duty is that of the cost accountant. When this has been done, it is possible to predetermine with surprising accuracy what should be the standard for the future period.

Beginnings of the Minneapolis System

To establish a municipal cost-accounting control, it is necessary to have the proper legislation. The Minnesota statutes of 1921, chapter 274, provide that every political subdivision of the state shall keep proper records of cost of all public work, that the total cost shall include all expense involved, and that in all cases the cost of all engineering and overhead shall be included. In July, 1926, the Minneapolis Council passed an ordinance supporting the state law and fixing the responsibility for proper installation and operation of a cost-finding unit, upon the city comptroller. The ordinance gives the comptroller authority to employ such personnel as he deems necessary for proper operation. A mandatory provision requires that any officer or person in charge of public work must submit such information as may be deemed necessary to show all costs involved in the work of which he has charge.

On August 1, 1926, City Comptroller Dan C. Brown appointed the writer to make the installation of a cost-accounting system and to take direct charge of its operation. It was found necessary to organize a staff, selected through civil service examinations, to handle a definite procedure. This staff is now engaged in stores control and inventory accounting, plant or equipment accounting, and cost accounting. The management of these persons is vested in the executives of the various departments.

Under a decentralized plan of organization such as this, management becomes very difficult; it is costly, limits the development of the personnel, and limits the use of mechanical equipment for accounting. A better plan of organization would be to have all accounting centralized in the office of the proper city accounting official. This would make possible more effective management, permitting the use of mechanical equipment

Form 209 2M 7-26

Sewer Department Report of Job No._____

MATERIALS AND SUPPLIES USED

Street From To

Foreman Date

Cement for Pipe Sacks Cement for Manholes Sacks

Cement for Concrete Sacks Lime Sacks

Sand Cu. Yds.—Stone Cu. Yds.—Coal lbs.

Gas Lumber Left In

Lumber Left In

Paving Brick Sewer Brick

Piling

Steel Bows

Steel Rods

M. H. Rings and Covers Step Irons

Kerosene gals. Grease lbs.

Compound lbs. Hard Oil lbs. Packing lbs.

Engine Oil gals. Motor Oil gals. Cylinder Oil gals.

Gasoline gals. Waste lbs.

Oakum lbs. Jute Sacks

Nails lbs.

Dynamite lbs. Caps

inch pipe Pcs Lin. Ft. Actual Ditch Measurement Lin. Ft.

inch pipe Pcs. Lin. Ft. Actual Ditch Measurement Lin. Ft.

inch pipe Pcs. Lin. Ft. Actual Trench Measurement Lin. Ft.

inch pipe Pcs. Lin. Ft. Actual Trench Measurement Lin. Ft.

Pipe Broken

Y's pcs. Y's pcs. Y's pcs.

Y's Broken

Curves pcs. Curves pcs.

Tees pcs. Tees pcs.

Sleeves

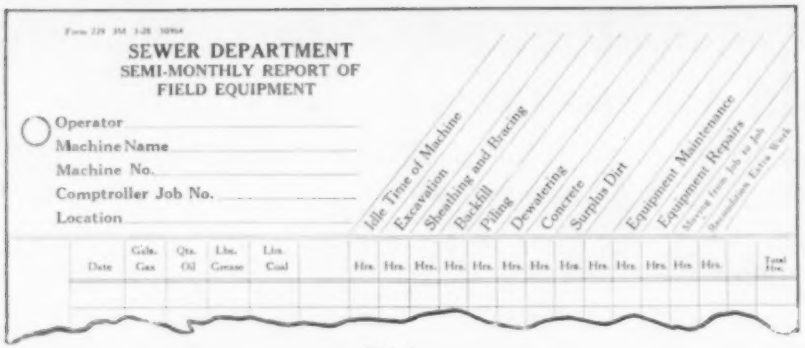
Pipe split for manholes pcs.

When no pipe were used in manholes mark No pcs.

Tools Worn Out or Lost

Notes-In making out this report show only **Materials Used,** in checking up pipe used put in size of pipe in inches, as for instances you are laying 18 inch pipe, check the actual tape measurements with the amount of pipe as reported to you by your pipe man.

FIG. 1


SEWER DEPARTMENT
SEMI-MONTHLY REPORT OF
FIELD EQUIPMENT

Operator
Machine Name
Machine No.
Comptroller Job No.
Location

Idle Time of Machine
Excavation
Sheathing and Bracing
Backfill
Piling
Dewatering
Concrete
Surplus Dirt
Equipment Maintenance
Equipment Repairs
Moving from Job to Job
Reconditioning Extra Work

Date | Gals. Gas | Qts. Oil | Lbs. Grease | Lbs. Coal | Hrs. | Hrs. | Hrs. | Hrs. | Hrs. | Hrs. | Hrs. | Hrs. | Hrs. | Hrs. | Hrs. | Hrs. | Hrs. | Total Hrs.

FIG. 2

and a permanent central filing of data, which would be more convenient to the public. Such a centralized plan would prevent minor and general executives from sitting in judgment on their own acts.

Dealing with Expense Elements

The Minneapolis system of cost accounting is based on the distribution of the four elements of expense—(1) labor, (2) material, (3) equipment, and (4) overhead. For labor, gang distribution forms are used to report service rendered. These forms are made out and signed by the foreman, checked by the field timekeeper and submitted to the payroll division for payroll purposes. After they are checked by this division, they are given to the cost clerk for cost purposes. The cost clerk submits comparative labor reports of the various crews, which are used to check the production of each crew. The cost of labor is then charged to the various cost accounts as shown by the distribution.

Material is purchased through a central purchasing agent and charged to stores accounts. A perpetual inventory and stores control is maintained. Stores are issued upon requisition to the foreman in charge of work. The foreman submits to the cost clerk reports of materials used, transferred to other jobs or returned to stores.

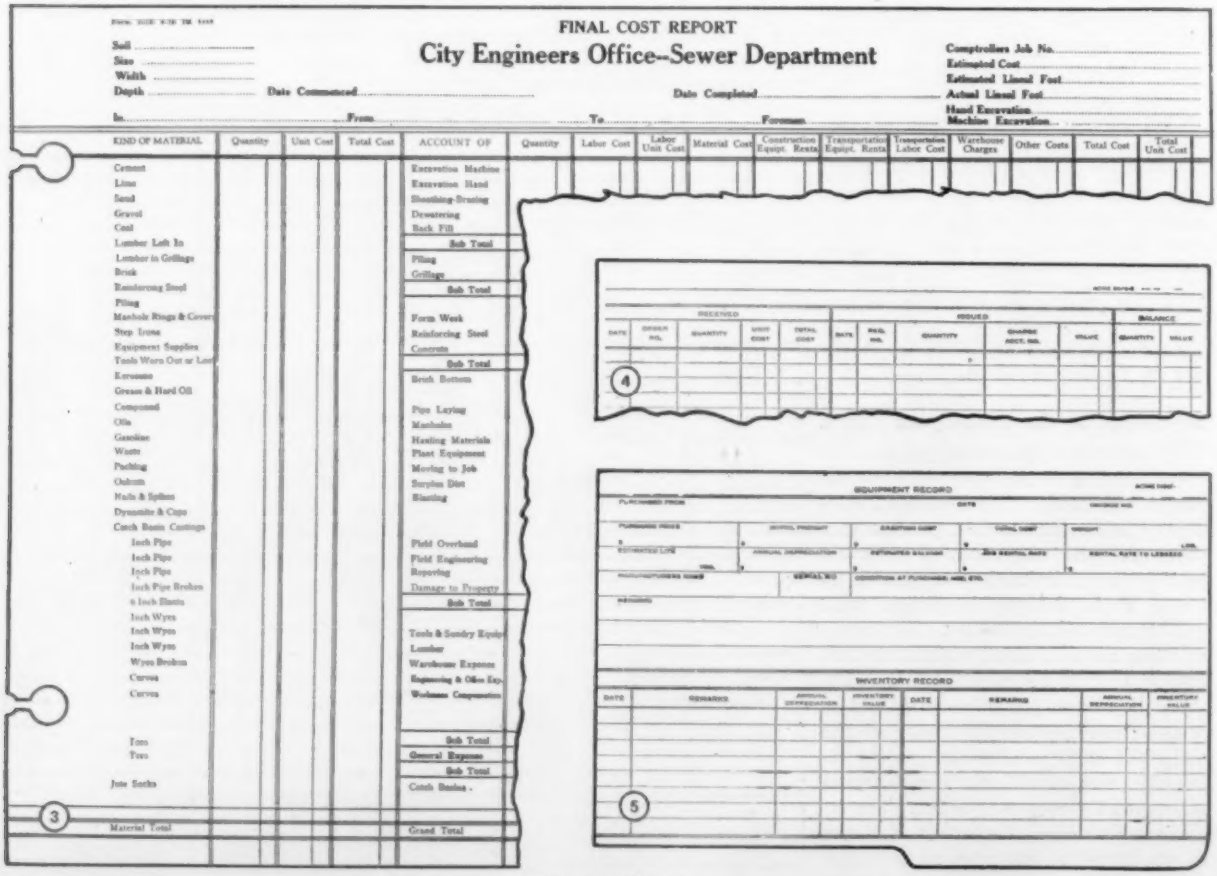
Equipment is rented to the projects at established rental rates. These rates are sufficient to cover all items of expense. Subsidiary records are maintained for each piece of equipment owned by the department. Equipment costs include operation, maintenance, depreciation, storage and overhead expense.

Overhead is divided into two classes—direct and indirect. The first is distributed against the direct labor cost; the second is distributed against the total job cost. General overhead includes the charge for service rendered by the various city administrative departments.

Illustrative Forms

For purposes of illustration, details of forms used by the sewer department are given herewith:

Labor Distribution.—A form (16½ inches wide and 9¼ inches high) entitled "City Engineer—Sewer Department—Labor Distribution for Pipe Sewers Only," and having at the top, "Comptroller Job No. ..... In ..... From ..... To ..... Date ....." carries column headings for the following kinds of labor, for which the columns show the hours and amounts: foreman, assistant foreman, handy man, bracer, sheather, bricklayer, first pipe layer, second pipe layer, teams, water carrier, watchman, steam engineer, gas hoist engineer, gas engine backfiller, concrete man, driller and blaster, special labor (3 columns), and laborers. The column for the last shows days as well as hours and amount. A final column is pro-


FINAL COST REPORT
City Engineers Office--Sewer Department

Soil
Size
Width
Depth
Date Commenced
Date Completed
Comptrollers Job No.
Estimated Cost
Estimated Lineal Feet
Actual Lineal Feet
Hand Excavation
Machine Excavation
In ..... From ..... To ..... Foreman

KIND OF MATERIAL | Quantity | Unit Cost | Total Cost
Cement
Lime
Sand
Gravel
Coal
Lumber Left In
Lumber in Grillage
Brick
Reinforcing Steel
Piling
Manhole Rings & Cover
Step Irons
Equipment Supplies
Tools Worn Out or Lost
Kerosene
Grease & Hard Oil
Compound
Oils
Gasoline
Waste
Packing
Oakum
Nails & Spikes
Dynamite & Caps
Catch Basin Castings
Inch Pipe
Inch Pipe
Inch Pipe
Inch Pipe Broken
Inch Elbows
Inch Wyes
Inch Wyes
Inch Wyes
Wyes Broken
Curves
Curves
Tees
Tees
Jute Socks
Material Total

ACCOUNT OF | Quantity | Labor Cost | Labor Unit Cost | Material Cost | Construction Equipt. Rental | Transportation Equipt. Rental | Transportation Labor Cost | Warehouse Charges | Other Costs | Total Cost | Total Unit Cost
Excavation Machine
Excavation Hand
Sheathing-Bracing
Dewatering
Back Fill
Sub Total
Piling
Grillage
Sub Total
Form Work
Reinforcing Steel
Concrete
Sub Total
Brick Bottom
Pipe Laying
Manholes
Hauling Materials
Plant Equipment
Moving to Job
Surplus Dirt
Blasting
Field Overhead
Field Engineering
Reporting
Damage to Property
Sub Total
Tools & Sundry Equip
Lumber
Warehouse Expense
Engineering & Office Exp.
Workmens Compensation
Sub Total
General Expense
Sub Total
Catch Basins
Grand Total

3

RECEIVED | DATE | ORDER NO. | QUANTITY | UNIT COST | TOTAL COST
ISSUED | DATE | REQ. NO. | QUANTITY | CHARGE ACCT. NO. | VALUE
BALANCE | QUANTITY | VALUE
4

EQUIPMENT RECORD
PURCHASED FROM | DATE | INVOICE NO.
PURCHASE PRICE | RENTAL PREPAID | ERECTION COST | TOTAL COST | WEIGHT
ESTIMATED LIFE | ANNUAL DEPRECIATION | ESTIMATED SALVAGE | 25% RENTAL RATE | RENTAL RATE TO LESSEES
MANUFACTURERS NAME | SERIAL NO. | CONDITION AT PURCHASE, MISC. ETC.
REMARKS
INVENTORY RECORD
DATE | REMARKS | ANNUAL DEPRECIATION | INVENTORY VALUE | DATE | REMARKS | ANNUAL DEPRECIATION | INVENTORY VALUE
5

FIGS. 3, 4 AND 5

EXTENSION NO. 4723
GROSS LENGTH 2,665.5 [30" Conc Pipe]
NET LENGTH 2,638.1 [48" Conc Pipe]
DRAWING NO. X 19 COMMENCED Oct. 1st, 1927

DETAIL COST — WATER MAINS

COMPTROLLER JOB NO. 616

POSTED TO PAGE 11 BOOK NO. 12
MACHINE EXCAVATION [X] X MARK
HAND EXCAVATION [ ]

COMPLETED Nov. 25, 19 27 SOIL Clay, Sand, Water & Frost

IN 27th Ave. North FROM Penn Ave. North TO Xerxes Ave. North WARD NO 10

ITEM	GROSS LENGTH FEET	INCHES	NET LENGTH FEET	INCHES	WEIGHT POUNDS	TONS	RATE DOLLARS	CTS.	AMOUNT DOLLARS	CTS.
24 Inch Pipe	2,665.5		2,638.1		616,066.93		5.31		13,976.45	
6 Inch Hydrant Pipe	11.9		10		358		.935		9.35	
6 Inch Connection "	50		48		1,718.4		.935		44.88	
6 Flexolit	27		19		680.2		.935		17.77	
8 Conn.	10		10		921		1.30		13.00	
Pipe Inspection 308.7 Tons					617,346.52		.30		92.61	
	AMOUNT OR QUANTITY									
Lead	180 Bars				17,100		8.80		1,504.80	
Packing	243 Lbs.				243		.09		21.87	
Coal	4200 Lbs.				4,200		8.30		164.80	
Kerosene	40 Gal.				280		.151		6.04	
	25 Lbs.				25		.05		1.25	
Lumber	720 F.B.M.						45.00		32.40	
Grease	25 Lbs.				25		.10		2.50	
Lubricating Oil	36 Gal.						.46		16.24	
Gasoline	865 Gals.						.14		121.10	
Denatured Alcohol	12 Gal.						.48		5.76	
Lime	3 Bbls				150		.517		1.55	
Brick	4800				24,000		15.00		72.00	
Crushed Rock	4 Bushel				460		.15		.60	
Cement	56 Sax				5,600		.65		36.40	
Sand										
Nails										
Nails										
Hydrants	One				700		82.25		82.25	
Gate	Three 24"				6,400		424.20		1,272.60	
	Eight 6"				1,440		26.00		208.00	
	One 8"				290		40.00		40.00	
Gate Stems	12 - Gate Stems				216		4.25		51.00	
	1-24" C.B. Ext.				62		2.50		2.50	
	2 - 2 x 240 Cyl.						2.08		4.16	
	2 - 2 x 240 Cyl.						2.08		4.16	
	18 - lbs. 5/16 Welding Rods				15		.14		2.10	
Special Castings	4 - 24 x 6 Tees				5,780		79.00		149.31	
	1 - 24 x 12 Tees				1,159		79.00		45.78	
	1 - 12 Plug				62		71.75		4.22	
	6 - 24 " Y. Boxes				3,216		79.00		113.15	
	1 - 8 " S. Boxes				400		98.00		15.80	
	3 - 8 " S. Cover				1,159		71.75		48.15	
	1 - 24 x 24 Cross				2,106		79.00		82.96	
	4 - 24 x 6 Cross				5,028		79.00		198.61	
	1 - 24 x 8 Cross				2,094		71.75		36.75	
	1 - 24 Sluices				4,250		71.75		152.20	
	1 - 24 Sluices				4,250		71.75		152.20	
	6 - 6" Sleeves				402		79.00		15.88	
	2 - 8 " Sleeves				198		79.00		7.58	
	1 - 1/16 x 8 Bends				3320		79.00		18.54	
	2 - 1/8 x 6 Bends				304		71.75		17.78	
	2 - 1/8 x 8 Bends				396		71.75		17.78	
	1 - 1/16 x 6 Bends				1,590		71.75		49.07	
	1 - 1/16 x 24 Bends				1,590		71.75		49.07	
	1 - 24 x 16 Reducer				675		70.00		23.62	
	1 - 16 x 8 Reducer				309		79.00		12.21	
TOTALS					706,748.93				18,672.95	
LABOR COST					352.57	Tons				
TOTAL COST										

SUMMARY OF LABOR AND MATERIAL

ACCOUNT OF	QUANTITY	LABOR COST	UNIT LABOR COST	MATERIAL COST	LABOR & MATERIAL COSTS	UNIT WHOLE COST COSTS
Machine Excavation Exc. #101	155 Hrs. @ 1.63	1,258.63	.55	69.66	1,562.25	.64
Hand Excavation 450 Cu. Yds.	254.00	515.84	1.15		515.84	1.13
Sheathing & Bracing		80.97		33.65	114.62	
Tamping		176.75			176.75	
Backfilling 400 C Y 72 Hrs. @ 50¢	42.00	1,008.61	.05	17.98	1,026.59	.07
Laying Pipe 2652 L F		1,050.65	.40	15,612.53	15,663.18	6.23
Hauling Pipe 308.7 Ton		843.02	.79		843.02	.79
Pumping 4 Hrs. @ 50¢	2.00	126.28			126.28	
Hauling Supplies		49.25			49.25	
Moving		93.65			93.65	
Laying Specials		162.46		97.87	261.33	
Setting Gates		87.98		1,268.57	1,356.55	
Hauling Specials, Gates, Hydrants		66.61			66.61	
Manholes		198.64		155.70	353.34	
Plant Equipt. Charge		162.89		2.10	165.49	
Drilling and Blasting						
Street Service		41.78			41.78	
Setting Hydrants One						
Boring Dirt 275 Hrs. @ $1 & 50¢	214.50	216.98		64.06	491.54	
Bell Holes		234.74			234.74	
Trucking 16 Hrs. @ $1.25	208.75				208.75	
EXTRA WORK						
Excav. - Sheath - Backfill		458.76			458.76	
Obstructions		277.65			277.65	
Connecting Up		267.21		1,155.32	1,422.53	
Reconditioning		5.00			5.00	
Field Overhead		514.65		6.04	520.69	
SUB TOTAL	2138 L F 701.25	7,317.84	2.70	18,673.93	25,991.77	9.84
Genl. Const. Exp. .035		934.23			934.23	
Supervision Supers. Exp. .022		587.23			587.23	
Engineering .015		400.39			400.39	
Personal Injury .006		160.18			160.18	
SUB TOTAL	2138 L F 2,985.26	7,317.84	2.70	18,673.93	28,774.48	10.80
General Expense .01		267.74			267.74	
GRAND TOTAL 2713.5	2,970.99	7,317.84	2.70	18,673.93	29,042.16	10.71
Date Started 9/27/27						
Date Completed 11/25/27						
Estimated Lin. Ft. 2,690						
Estimated Cost $20,719.80						
No. days						

RATE 10.71 LAID BY J. K. Hiland FOREMAN.

FIG. 6

vided for the total amounts. Down the left-hand side are listed the following accounts:

	Extra Work
Machine excavation	Recondition
Hand excavation	Surplus dirt
Sheathing and bracing	Drilling and blasting
Backfill	Boulders
Dewatering	Trees and clearing
Piling	
Grillage	
Pipe laying	Field overhead
Manholes	Field engineering
Hauling materials	Personal injury
Plant equipment	
Moving to job	

At the bottom of the sheet, besides totals, there is space for quantities of work done, and the signatures of foreman and timekeeper.

A somewhat larger form, differing as to a few headings, is used for concrete sewers.

Materials.—The "Sewer Department Report of Materials and Supplies Used" (8½ by 11 inches) is shown as Fig. 1. A "Sewer Department Foreman's Transfer Slip" (6 1/8 by 4½ inches), in duplicate (white and blue), carries at the top, besides date and number, the following heading: "To Cost Department: the following items have been transferred from Job No..... to Warehouse No..... or Job No....." There are columns for quantity, items and amount, with 10 lines for entries, a space for the foreman's signature, and the note: "Foreman will send this form to the office whenever a transfer is made."

Equipment.—The headings for the "Sewer Department Semi-Monthly Report of Field Equipment" (8½ by 11 inches) are shown as Fig. 2. The lower part of the form has spaces for period total and total to date, at the foot of each column, after 15 lines for entries of the details. There is space for remarks and for the signatures of foreman and timekeeper, and the following is appended:

"Note.—Fill in your waste and packing used each period under remarks. Each operator must keep the above record on each job, showing the above information opposite date machine is operated. This report to be given Timekeeper on the 1st and 16th of each month."

Final Cost Report.—This report (15½ by 11 inches) is shown as Fig. 3.

The headings of a material record card (8 by 5 inches) are given in Fig. 4, and Fig. 5 shows an equipment record card of similar size, on the lower part of which appears an inventory record.

The detail cost sheet (16¾ by 13¼ inches) for a water-main installation is shown as Fig. 6, filled out with the data for a specific job.

Most of the public improvements constructed by the city engineer are done by day labor and require the supervision of numerous field crews. It is necessary that all the men in charge of work be given bulletins concerning the submitting of reports. It is also necessary that the minor executives, such as division heads, be given comparative reports concerning their organization. This calls for a general plan of cooperation. Therefore, when any changes are suggested, the minor executive is consulted and his needs are satisfied.

Presentation of Cost Data to Executives

When the system is installed and the data assembled, the most important function of cost accounting is reached. The use of organized knowledge is then made possible. The presentation to the executive is most important. We use tables of comparison, charts and graphs depending upon the data to be presented. Some executives can best get the picture by graphs, others by charts, others by

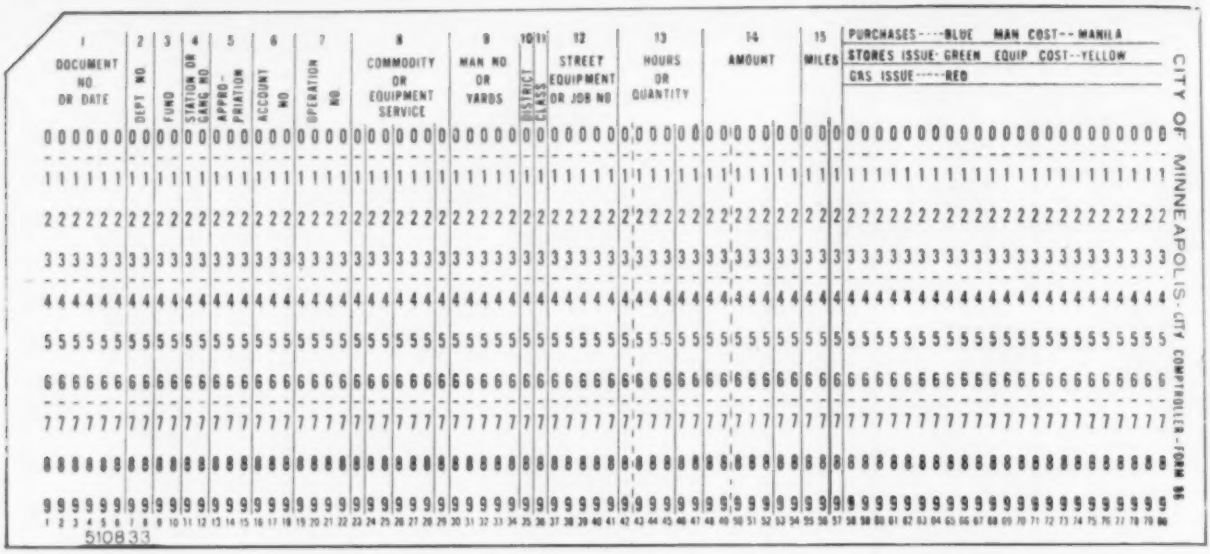


FIG. 7

concise and pointed reports treating only such matters as demand attention.

Cost data should be presented by the method best adapted to their comprehension by the executive who uses them. This should be done as promptly as possible, in accurate, tabulated, and easily comparable form, arranged to provide unit comparison. Data should aim to secure executive action. Reports concerning data should give credit where credit is due, and should be concise and to the point.

In Minneapolis these reports are submitted to various executives, including the Board of Estimate and Taxation, of which the Comptroller is a member. This Board allows appropriations and budgets, and establishes the tax rates. It is necessary that they have for their use all available data from which they may draw conclusions.

Again taking as an example the Sewer Department, a report covering in detail the costs of pipe sewers in 1928 was prepared at the end of the year and furnished to the Comptroller. It gives comparisons of actual costs with estimates, shows the derivation and amounts of unit costs of sewers, and presents a total for the saving accomplished in comparison with 1927. Jobs are divided into four classes before determining unit costs: (1) machine excavation jobs where general soil conditions are good and where no water is encountered; (2) those where it is necessary to do most of the excavation by hand, and which may be considered very simple hand excavation; (3) hand excavation jobs consisting of rock, boulders and hard-panned clay; and (4) difficult hand-excavation jobs consisting of quicksand and water and where very hard digging is found. Within these classes, the costs are established on a per-foot basis for the various sizes of pipe. In the textual matter the savings in unit costs are discussed, with remarks on the effect of increased use of machines.

Somewhat similar reports for the year were made covering costs of water-main construction, paving repairs, curb and gutter construction, auditorium operation, etc. Comparative monthly cost-analysis reports are also prepared for certain activities.

Perhaps the best evidence of the success of a cost system is the results shown in the savings to the taxpayer. During 1928 Minneapolis expended about two million dollars in construction of new sewers, paving and curb and gutter. A saving of over $100,000 dollars was shown when compared with 1927 costs, and when compared with 1926 costs this saving was doubled.

When started, the cost system was intended to cover only construction work. Since then the scope of the system has been extended to take in more of the departments of the city government, until today costing is being applied to such operating departments as street maintenance, garbage collection, auditorium operations, and many other divisions.

Machine Accounting

The City Comptroller was recently authorized to install an 80-column Hollerith machine. This will go into service January 1. The machine card, Figure 7, has an acounting set-up in fifteen fields, with additional space for future fields, which we foresee will be needed for other accounting purposes as the machine accounting progresses.

Recreation Areas in Subdivisions Increasingly Popular

THE setting-aside of land for park and playground purposes in real estate developments has assumed the proportions of a national movement. So much is outstandingly apparent from a chart prepared by the Playground and Recreation Association of America, 315 Fourth Avenue, New York, to show the results of a recent survey, and published in a 32-page brochure with an illustrated introduction.

This chart records details of 278 subdivisions, and is presented as "far from a complete picture, since 147 subdivisions known to have recreation space were omitted on account of insufficient data." It shows a known total of 8,075 acres allotted to such uses in subdivisions comprising a total of 109,327 acres. This is an average of 7 per cent. Of 187 subdivisions in which both total acreage and recreation acreage are known, 58 per cent have set aside more than 5 per cent. Of this number, 71, or 32 per cent of the total, have reserved 10 per cent or more for play.

Recreation developments are recorded in subdivisions in 34 states, with New York and North Carolina leading the nation with 34 and 32, respectively. One city, Greensboro, N. C., has 18 subdivisions with such provisions, and another, Kenosha, Wis., has 15.

Such developments are the direct concern of public officials, and administrative heads of park and recreation systems, as well as of real estate operators. The matter of tax and maintenance is of importance; the matters of title and administration; also the question of how small a subdivision can afford to set aside space for athletic fields, tennis courts, playgrounds, golf courses. The survey deals with all these, in terms of current practice.

Window Card Calls Refuse Collector

Satisfactory System Worked Out in Massillon Without Burdening the Budget

By C. E. RICE
City Engineer, Massillon, Ohio

MASSILLON, OHIO, in one of the industrial cities of northeastern Ohio, and has a population of about 28,000. The Federal census taken in 1920 credited this city with around 17,000 inhabitants, which indicates an unusual expansion. Because of this rapid development, the citizens were not accustomed to the conveniences in the way of waste collection and disposal that the older cities used. As far back as 1923, agitation was started by certain civic organizations looking toward getting regular systematic garbage collection and disposal by the city in place of the unregulated private scavenger system then in use.

From 1923 to 1926 the engineering department made a quite thorough study of methods and means of obtaining a satisfactory system of collection and disposal of waste material in the city. The results of this study were that recommendations were made to the City Council to construct a modern incinerator for the burning of mixed rubbish and garbage and that a modern collection system be installed for the collection of such waste matter. A bond issue of $40,000 was submitted and passed by the electorate for the site and the building of the plant. The actual construction was delayed for two years by injunction suits carried up through several courts by private parties, claiming that the plant location would be a nuisance. At each hearing the municipality was victorious in its suits, and since the completion and operation of the plant these plaintiffs have admitted that their fears were groundless.

New Incinerator Completed in March, 1929

In the late fall of 1928 construction was started on the plant, which was completed in March, 1929. The plant is a 3-cell Superior furnace having a rated capacity of 30 tons of mixed refuse in 10 hours. On the official test of the plant which was made before acceptance by the city, the guaranteed capacity of 30 tons of mixed refuse and garbage in 10 hours was exceeded, as was also the guarantee on the labor and other costs of operation.

The plant was put into operation on April, 1929, with volunteer applications from the citizens for collection service.

Collection Service Begun Through Individual Payments

Because of starting after the fiscal year, and because the Council did not desire to increase the general tax levy to finance collection and disposal of refuse matter, an ordinance was passed making the cost 50 cents per month for household service per family, payable on even quarter of the year three months or multiple thereof in advance. This service includes collection of all garbage and refuse, and when payment is made annually in advance, ash collection is

COLLECTION AND DISPOSAL OF MASSILLON'S REFUSE

1. The collapsible step open for use, so that the collector does not have to step from the top of the curb. 2. Detail of the step closed during hauling. 3. Character of household refuse collected. Kitchen garbage is wrapped in newspapers. Tin cans and all other refuse, except ashes, go to the incinerator together. 4. The front of the furnace on the stoking floor

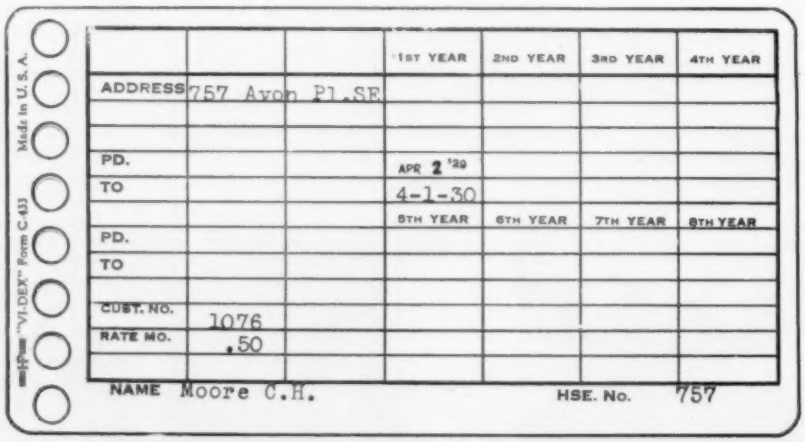
LOCATION OF INCINERATOR IN MASSILLON WITH RESPECT TO BUSINESS AND RESIDENTIAL DISTRICTS

also furnished at no additional cost to the home.

Upon payment for the service, the customer is given a receipt, on the back of which are instruction as to preparing the garbage — wrapping it and keeping all garbage and other refuse separate from furnace ashes. All containers must be on the ground level and covered to prevent entrance of snow, rain, etc., and are limited as to maximum weight so that one man can handle them easily. Business places are given a special rate payable quarterly or annually, depending on the amount collected, a rate which is determined after a two-weeks test collection, the price being set at 25 cents per hundredweight. Some business houses haul their own waste matter to the plant, where it is burned for 15 cents per hundredweight.

Accounting Methods

With the receipt which the customer gets when he pays for the service, he gets a card about 8 inches square which is good for the service for the period paid for. The color of this card is changed for each succeeding quarter, a white card being used for annual customers. These cards are posted by the patron in a conspicuous place near where the containers are to be found by the collector. A stub from this same card is detached at the office when made out, and is sent to the superintendent at the plant for his routing. A Videx looseleaf ledger system is used for the customers' accounts, arranged by streets; the slips when made out are put into the book, so that when opened to any street all of the customer account cards show the names of the customers arranged alphabetically. A colored slip is used for quarterly accounts, and white ones for annual accounts. As the customers renew their service, it is only necessary to stamp the renewal date on the slip, completing the bookkeeping record. The Superintendent of the plant has a duplicate set of Videx books and slips, but arranges his cards on each street by house numbers to facilitate his record keeping.



A SAMPLE PAGE FROM THE VI-DEX BOOK OF CUSTOMERS' ACCOUNTS

Collections are made once a week except at apartments or business places, which demand and pay for additional collections.

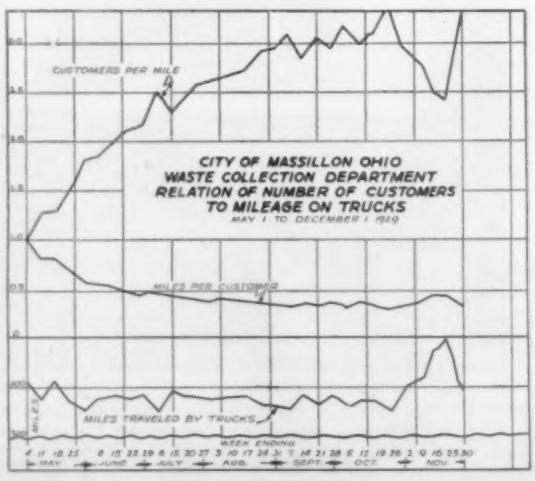
Collection Equipment

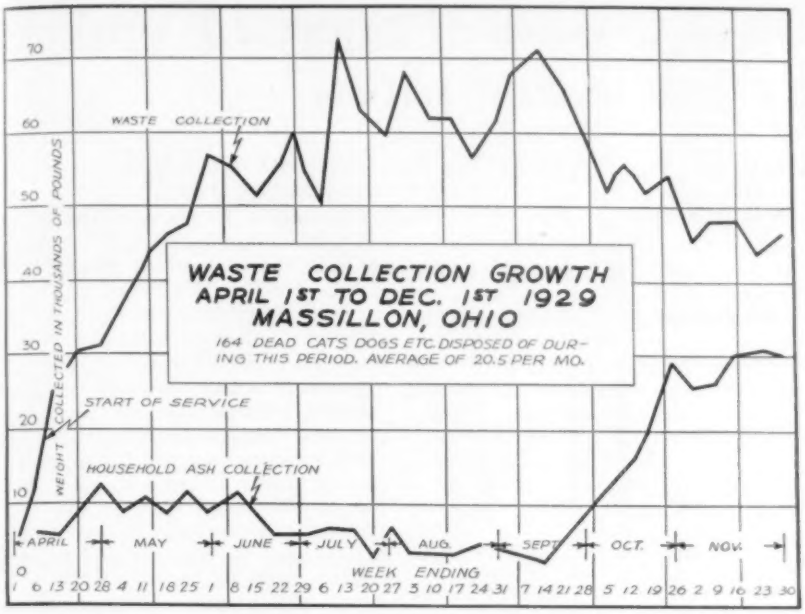
Two Model-A Ford trucks equipped with Marion steel dump-bodies were bought to start the service. Additional side boards were put on the top of the body. The department worked out a folding metal step which is attached to the side frame of the car to permit the collector to step up in order to dump the containers into the truck. The collection trucks have enclosed cabs and each one is equipped with a tarpaulin which is kept over the load at all times to prevent litter, paper, etc., from being blown over the streets en route. A third similar truck was later purchased, but has not yet been needed for service. The Superintendent of the Waste Collection Departmnt was furnished a Ford Model-A steel-body pick-up truck with enclosed cab, equipped with tarpaulin, etc. This car is used for emergency runs, picking up cats, dogs, etc., that are killed on the streets, and for general errand work. The larger trucks are fitted with a removable partition by which the rear end of the body is used for ash collection when needed, although it may be found advisable later to make separate trips for ash collection.

Plant Operation

The incinerator is operated by two laborers, and at present it is necessary to burn only twice a week. The furnace is equipped with a recording pyrometer which shows the temperature of both the combustion chamber and the base of the stack. Operating temperatures in the combustion chamber average about 1800 degrees, using cold air, as no preheaters are employed. The blower is used only occasionally, for the natural draft is sufficient for operation.

The site of the plant comprises about 2½ acres, ¼-mile from the center of the city, all of which can be filled about 5 feet average from ashes collected and ashes from the plant. The Pennsylvania Railroad runs along the west side of the site. It is planned to

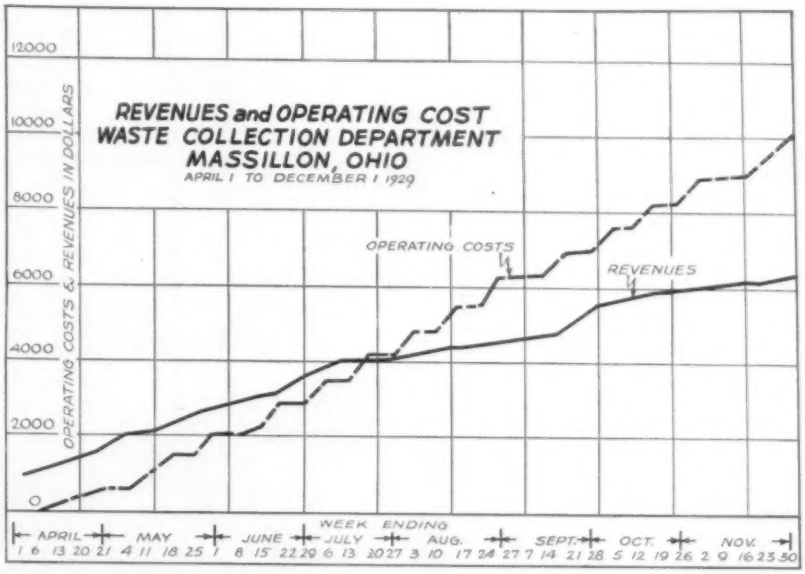



WASTE COLLECTION GROWTH
APRIL 1ST TO DEC. 1ST 1929
MASSILLON, OHIO
164 DEAD CATS DOGS ETC. DISPOSED OF DURING THIS PERIOD. AVERAGE OF 20.5 PER MO.
WASTE COLLECTION
START OF SERVICE
HOUSEHOLD ASH COLLECTION
WEIGHT COLLECTED IN THOUSANDS OF POUNDS
APRIL MAY JUNE JULY AUG. SEPT. OCT. NOV.
WEEK ENDING

develop the site into a supply yard and move the street maintenance machinery from the present service department site downtown to the incinerator site, where railroad shipments can be unloaded and stored without extra hauling, as at present. At present when asphalt paving is laid, the asphalt plant is set up on a siding on any available place in town. When this future yard is developed, an asphalt plant can run in on the city siding, where we already have a set of platform scales that can be used in weighing out the paving material.

Growth of Service

At present there are about 1,250 customers. Calculations show that if the plant were serving the entire city, there would be about 3,600 customers. The customer account list is gradually growing and it is anticipated that eventually the private collectors will cease operations, leaving the entire field to the city. The collection costs for the first eight months of operation were $4.89 per ton. By careful forecast and study it has been determined that the city should handle about 20 tons per day if the entire city were served and could handle this amount by doubling the collection equipment and personnel. This would make a collection cost of $2.62 per ton. The operation costs at the plant, including labor, power, telephone, repairs, light, etc., for the first eight months, without considering carrying charges on the original investment, were $3.15 per ton. It is estimated that if the city were serving the entire city and increased the labor, etc., necessary to care for this, the cost for operation of the plant would drop to $1.69 per ton. From a careful study of the operation of the system it is evident that if the City Council eliminated the private collectors through legislation, the more uniform, sanitary and efficient system operated by the city could be used for all the municipality and be made to break even on revenue collected according to the present rates.



Personnel

F. C. Tolles, of Cleveland, Ohio, was the consulting engineer in making the original recommendations and specifications. The writer had charge of the erection of the plant and the organizing of the collection system. The Superior Incinerator Co., of Dallas, Texas, were the contractors and were represented in the erection of the plant by J. S. Pitts. W. E. Weaver is Director of Service-Safety, under which the Bureau of Waste Collection operates. John Beatty is Superintendent of the Bureau.

A Lost Opportunity—What County Will Embrace It?

IN voting on a new charter this February, Stanislaus County, Calif., is showing a progressive spirit that is worthy of note, but at the same time is passing up a remarkable opportunity for national prominence.

"Two provisions of the new charter," says the National Municipal League in a recent statement, "are particularly constructive: the first, the establishment of centralized purchasing; the second, the consolidation of several offices previously held by different individuals. This is excellent.

"It is no easy task to go through the routine of getting a new charter ready for adoption, however, and it is regrettable that Stanislaus didn't go the full way in reorganization and establish a county manager, while it was doing the job.

"Probably the charter is the result of compromise, as is usually the case. Undoubtedly there were far-seeing enthusiasts who appreciated what a complete reorganization of Stanislaus' government would mean. But there were undoubtedly others who announced that they would fight any such charter to the last ditch.

"This leaves the way open for some other county to be the first to adopt the manager plan in toto. The race isn't always to the swift. This isn't the first time that a runner, off with the bark of the starter's pistol, has stumbled in the cinders and let someone else beat him to the tape!"

Police Handling of Crowds at Special Events, Processions and Fires

By
CLARENCE P. TAYLOR
Assistant Traffic Engineer
Massachusetts Department of Public Works

and
MILLER McCLINTOCK
Director, Erskine Bureau
for Street Traffic Research, Harvard University

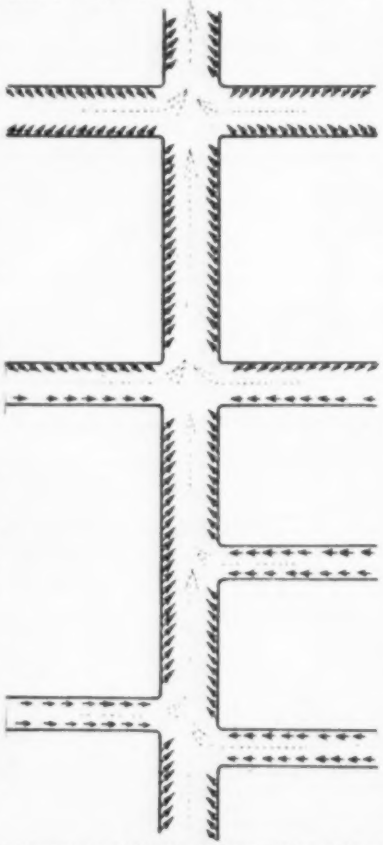
AN important part of a traffic officer's duties nowadays is to care for the traffic accompanying unusual events which draw large crowds. At such times a traffic officer is in the public eye more than ever, and it behooves him to keep his head and to acquit himself well.

Sports, entertainments, and social affairs often have the faculty of attracting enormous crowds into the particular neighborhood where the event is to take place. The function of traffic officers on such occasions is to aid patrons to get to the place and to return home as easily, quickly, and safely as possible, and with as little disturbance to normal traffic demands as can be expected.

Before the actual day for the gathering arrives, a complete plan should have been evolved. All the police problems should have been worked out and the details of men made up. The traffic problems, too, should all have been well settled.

Advance planning presents an opportunity to organize the work efficiently. Conferences between managers of the attraction, operation superintendents of the mass carriers, those in charge of the policing, and the man in charge of the traffic, are essential for complete coordination of all facilities. However, if a traffic man is to be responsible for the handling of traffic, he ought to be relied upon to discharge his responsibilities properly without undue interference from other officials.

The simpler the form of organization, the better, because the lines of authority should be so clear that misunderstandings as to who is in charge of a particular piece of work cannot occur. For this reason the territory adjacent to the stadium, auditorium, or wherever the gathering place may be, had best be divided up into districts with a superior officer in charge of each. Their efforts can then be coordinated by the head of the traffic department through an adequate communication system. The districts may be divided into sections with a man in charge of each, who should be held responsible for having the orders of the district superintendent executed by the men assigned to do the actual work. The man in charge of a section should not be required to handle too many men nor to cover too large a territory. The work of from four to eight men is about all he can look after well.



PARKING PLAN FOR VICINITY OF LARGE GATHERINGS

The cars will naturally follow the prescribed route when the crowd leaves

Estimating Attendance and Vehicles

Those in charge of events usually can forecast with a fair degree of accuracy the probable attendance. From this it is not difficult for those experienced with a particular problem to reckon the number of men that will be required. Where the particular problem is a new one and there is no past experience for guidance, it becomes necessary to make estimates. Under these circumstances an estimate of the anticipated attendance is needed first; then, depending on other transportation opportunities, the number of parked vehicles to be cared for will be probably around ten or fifteen per cent of the attendance. Ernest P. Goodrich has found that theaters and football games draw one-tenth as many cars as patrons. This checks with the findings at the games held in the stadium of the University of California. Harvard stadium brings about fifteen per cent as many vehicles as patrons.

From the estimate of the probable number of vehicles that are expected, comparison can be made with the accommodations found necessary for similar crowds elsewhere; or the area which this estimated number of vehicles will cover when parked can be computed, and the number of men required worked out on this basis. After handling the traffic for two or three events at the same place, the requirements become easier to estimate.

Who Shall Bear the Cost?

Such attractions often disrupt the regular daily work of traffic officers and often seriously disturb a city's police protection. Hence, as far as a city is concerned, it suffers, while the promoters profit. This is a view that suggests that all costs for handling the extra traffic burdens of a non-public type of attraction be charged against the beneficiaries, and this is the practice of the London Metropolitan Police. The opposing view holds that the proper protection and handling of crowds is one of the duties of every city, regardless of who benefits from the proceeds of the event. Furthermore, if no policing were furnished, the regular flow of traffic would be unduly inconvenienced and streets would become so blocked with vehicles that fire apparatus probably would not get to a fire, should one break out in the neighborhood; for which reason it is sometimes felt the city should bear all of the expense.

There is much truth in both views, and that is why a middle ground for the defraying of expenses has been so widely adopted. Under this scheme the city furnishes without charge all of the on-duty men it can, and all other facilities that these men normally would use; but all off-duty officers or extra help that must be hired for the occasion, and all special equipment that is required, are charged to the management of the attraction. This seems fair and has proved to be satisfactory. There is a slight departure from this rule in some places, where the management pays all expenses for help employed within the limits of its property, but for that upon the public streets they may or may not follow the middle-ground plan.

Methods of Communication

With the aid of a police signal system, strategically located telephones and mounted men assigned as couriers, the men handling districts and the man in charge of traffic ought to be able to communicate quickly and to smooth out difficulties as they arise. The district superintendent either must have a courier on a motorcycle or be able to ride a motorcycle himself, in order that he may keep in touch with his sections as conditions change. Automobiles can be used for this purpose, but are not as easy to get around in as a motorcycle.

Usually it is found expedient to close certain areas or streets to vehicular travel so as to make room for foot traffic or to permit street cars or trains to move at high speed and without interruption. Each situation presents its own problems with regard to closing certain streets or areas; but there is one thing that is very much in common—the necessity for closing as little territory as is practicable. The people within closed districts must be considered, and outsiders are constantly inventing new reasons why they should be let in; hence, there is bound to be less friction and the work of handling the traffic will be easier if such prohibitions are kept at an absolute minimum.

Restrictions on Street Parking

Certain thoroughfares, being principal arteries for travel, often need to be restricted as to parking, in order that they may carry off the extra traffic burden placed upon them more efficiently. Like closed areas, these restrictions, too, should be no more than can be adequately policed, because drivers are apt to park their cars and run if there is no one to prevent them from doing so.

Temporary NO PARKING signs fastened to poles, trees, etc., are a great help in preventing parking; but they are only supplementary to the officer in attendance, and never can entirely replace his services.

It is desirable to have "No Parking" streets patrolled some time before the arrival of the principal rush, so as to avoid violations which will mislead later arrivals. Unless this is done, misparked cars will have to be removed. Where there is much of this work to be done, it will be worth while to have it done by a fully equipped towing crew, for the officers are likely to get their clothes soiled or torn and to become generally unpresentable. Yet it is important that the work be done, because it is almost impossible to keep drivers from leaving their vehicles in any space available, if other cars are already in the same block.

Passes are a nuisance to issue and inspect. While it may be possible to eliminate them for closed-area use, where the problem is principally one of passing qualified residents of the closed area district and delivery vehicles, it is hardly probable that this can also be done for the vehicles which are to be furnished with selected parking places under the care of the management, especially if there are many of them and the crowd is large. This latter type of pass usually is for the purpose of providing a close-in parking place for cripples, infirm people, officials, dignitaries, participants, etc., and the management should station their own men at one or two agreed entrances to inspect these passes.

Some vehicles need to move in and out of the whole district without hindrance; the best type of pass for such vehicles is a banner fastened in front which describes their business. Upon their approach a traffic officer can quickly see who they are and govern himself accordingly. Police cars, official cars, certain vehicles making deliveries, press cars, etc., typify the vehicles that may require this kind of special pass.

Helping Mass Transportation Vehicles to Function

Rapid-transit, trolley and bus lines need to be given every reasonable opportunity to function at their highest efficiency. Their operating men often have valuable suggestions.

Taxis do a thriving business at major events, and each driver tries to make as many trips as possible before the start and after the end of the performance. One very good remedy for the congestion this creates is to provide a one-way loop route, over which taxis may go to and from the gathering without bucking traffic. Private cars with drivers should be permitted the same privileges accorded taxis, with respect to using a loop whereby a convenient place to discharge passengers may be reached. Special parking areas may or may not be provided for them, as deemed wise, and the same may be said about providing a subsequent rendezvous. It may be possible to allow them access to the same loading point used by the taxis.

If it is deemed necessary or helpful to direct the movements of the incoming or outgoing traffic, it is best to post conspicuous direction signs along the routes chosen. And if it is imperative that traffic be made to follow certain definite routes, officers must be posted at all intersections to prevent undesirable movements. Again, care must be exercised not to overdo this feature, for it entails much work and trouble.

Little or much can be expended on arranging parked vehicles, depending on the result sought. If it is of importance that the crowd be cleared out quickly, then it is possible to do so by careful arrangement of parked vehicles. In most instances it has been found that any effort to have vehicles park according to a definite plan is very costly and troublesome; and it has seldom been continued after a fair trial, because the time saved apparently does not justify the effort. Hence, the practice in most places is to permit vehicles to arrange themselves according to custom, provided, of course, that they do not block the flow of traffic.

Off-street parking facilities are helpful, and unless they are dishonestly managed in particular instances, there is no reason to discriminate against them. The fees charged are of no concern to the traffic department, provided they are not creating trouble. Those handling such enterprises should be encouraged to post conspicuously the price asked for their parking accommodations.

Getting Extra Help

In a very large city there are usually enough on-duty men to handle any large crowd, and therefore there is no problem in regard to personnel. But in a small city the total of combined police and traffic forces sometimes is not of adequate size to manage an exceptionally large crowd. Under these circumstances it becomes important to find extra help.

Traffic and police officers of outside jurisdictions should be the first source to be considered, because of their experience in the work they will be expected to do. Next would come local firemen in uniform, because they command respect and usually are excellent workers. Other sources are special police, deputies, citizens, college students, the Junior Traffic Police, and the local Boy Scout troops. The work which this last group can do satisfactorily is very limited, but they can be of great service if attached in squads of four or five to a police officer to work under his direction. If possible, a distinguishing badge should be displayed on their persons so that they may be recognized easily by other citizens, thus avoiding friction through misunderstanding.

The work of posting the men takes more time than one would expect, hence it is wise to set a very early time for assembling. Orders ought not to be given too hurriedly, lest an officer fail to understand them thoroughly. A typewritten synopsis of each man's particular duties and a mimeographed copy of the general instructions for the day is a good method for distributing orders. It is well, however, to repeat the same thing verbally before posting. Personal check-ups by the section and district superintendents after the men have started work is necessary for best results.

Each officer should be told what he is to do during the influx, during the exodus, and between the influx and exodus of traffic.

Parades and Funerals

Whether the procession is to be a parade, caravan, funeral, or other moving train of persons, it should be planned ahead. The amount of preliminary detail and effort devoted to it of course would depend upon its size, character and route, as well as the probable number of onlookers.

It is well that most localities require a permit to be issued by some authority, setting forth the proposed route and the starting time of any procession, before it can lawfully be allowed to take place.

Street-car companies also are entitled to know well in advance what the schedule is to be. They like to send inspectors out to handle car service, so that there will be as little interference with the procession and their patrons' transportation as there consistently can be. Officers in charge of traffic at various points should do whatever they legitimately can to get mass carriers through the procession without unduly disturbing it.

What has been said earlier in this chapter about closed areas, "No Parking" zones, clearing the streets of parked vehicles, and personnel, applies equally well in the case of a procession.

The crowds that come to view such events often provide a problem in themselves. The greatest difficulty with onlookers is their tendency to get in the way of a procession, either by crossing through it or crowding in too close. It is possible for officers to prevent excessive interference by individuals wishing to cross the street; but even in large cities where plenty of help is available, a large crowd can force itself out into the roadway and cause much interference.

Officers mounted on horses are effective against this form of trouble, and motorcycle officers, by riding close to the crowd, can accomplish considerable, too, in driving them back, but it is very undesirable to have to do this kind of work. A stout and strongly supported cable, forming a fence along the curb, can make it possible for an officer to perform his duty of keeping the people on the sidewalks. Cities are careless in regard to erecting such fences or having such material on hand; but without it officers can not keep enthusiastic crowds back out of danger where they belong, nor can processions, which draw large crowds, be displayed to the best advantage of everybody.

The problem of proper formation of units does not belong to the traffic department, but should be handled by those managing the procession. Traffic men usually have enough to do without meddling in these affairs, although they ought to be willing to assist in emergencies.

One of the chief duties of the motorcycle men is to keep the train intact and to keep it moving. It is rarely that the leading units cannot be kept moving, but it is always true that the units toward the rear have difficulty in keeping up. For this reason it is necessary to halt the head of the procession occasionally in order that the whole thing may appear continuous and not disjointed. Motorcycle officers are invaluable in this connection, for they can scout the line and report conditions to those at the head who set the gait.

A procession moved entirely on wheels ought never to exceed a speed of fifteen miles an hour if it is to be kept intact. In vehicular processions, it is wise to have one or more motorcycle men ride the line.

If a caravan is to consist of a hundred or more vehicles and to tour around for several miles, it may be best to break it up into several sections of about fifty vehicles, each with its own escort and following each other at intervals of a few minutes. Such a procedure gives the regular traffic a chance to get through. At the same time, such sections are easy to keep intact, and usually better time can be made.

A motorized officer often can direct traffic from several locations over the route of a procession by staying at one point until the last unit has passed and then driving to an uncontrolled post ahead, whereupon the same performance is repeated until the procession has disbanded. This is termed "leaping assignments."

Disbanding should take place where several street exits are available, in order that one unit may not interfere with another.

It is not customary for traffic departments to furnish escorts for advertising caravans, nor for very small groups of vehicles other than the retinues of dignitaries.

The American Flag

Uninstructed officers are sometimes in doubt as to the proper ethics when the flag of the United States passes. No salute is given the flag, except when the uncased colors pass by; therefore small hand flags, flags attached to vehicles or buildings are not saluted. Also, if an officer is busily engaged in the work he is supposed to do, he is not expected to stop for the purpose of saluting the colors; but he should always try to salute them whenever they pass, for it is exceedingly disrespectful to stand idly by and fail to give a proper salute. The proper salute for an enforcement officer in uniform to give is the military salute.

The Soldier Training Regulations 50-25* describe this as follows:

"*Salute with the Hand.*—Raise the right hand smartly until the tip of the forefinger touches the lower part of the headdress or forehead above and slightly to the right of the right eye, thumb and fingers extended and joined, palm to the left, upper arm horizontal, forearm inclined at about 45 degrees, hand and wrist straight; at the same time turn the head and eyes toward the person saluted. (Do not turn the head more than 45 degrees from the front.)

"Drop the arm to its normal position by the side in one motion, at the same time turning the head and eyes to the front."

Handling Crowds at Fires

People will follow fire apparatus and congregate to view scenes of unusual occurrences despite all that can be done to prevent it. The best that can be done is to seek to control undesirable effects.

Emergency apparatus responding to a call often creates a great amount of noise and disturbance—a factor that in itself intensifies an individual's desire to learn what all the commotion is about and one that aids him in locating it. Perhaps if apparatus exhausts were muffled, and the warning devices used more judiciously, people would not be stimulated to follow the noise. If attempts were made to conceal from the public whether the apparatus is going to or returning from a call, the public would become discouraged in their unwelcome practice.

At ordinary small fires and the like, traffic officers should try to divert vehicular traffic from entering the block where firemen are at work, by posting themselves at each of the possible entrances. At larger fires more posts will need to be covered and consequently more men will be required. In addition, a large crowd of onlookers may gather and become endangered as well as in the way. Such crowds are often difficult to control. Some fire departments carry ropes in their vehicles for the purpose of roping off the hazardous area and keeping "rubber-necks" out. If the crowd is entirely unreasonable and unmanageable, firemen have been known to turn the hose on them, and to thus secure prompt obedience to orders.

Foods, cyclones, earthquakes, and extraordinary fires may wholly ruin a community or leave a part of it devastated. Simultaneously, police and traffic problems appear. Life and remaining property must be protected and a rigid control over traffic exercised.

Some cities have worked out plans of organization in advance, so that, should a catastrophe occur, every municipal department and each executive and employee would know what to do without unnecessary delay.

The American Red Cross has been aiding in the development of disaster preparedness plans and should be consulted in this regard.

* Obtainable from the Government Printing Office, Washington, D. C.

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FORWARD STEPS

Reported by

Municipal Officials, Chamber of Commerce Executives, and Others

County Planning Federation Celebrates Third Year of Progress

WHITE PLAINS, N. Y.—With a membership representing over 77 per cent of the county's population, and with dues 100 per cent paid—all out of municipal budgets—the Westchester County Planning Federation has entered upon the fourth year of its career. Established in the fall of 1926 to promote planning on the part of the communities within the county and to cooperate with state and county authorities in regard to county planning, the organization has seen a remarkable and progressive movement in city, village and town planning develop within its territory and has had rapid and continuous growth in membership and activities.

The greatest advance in planning in the county during any one year occurred in 1929, when comprehensive plans were completed in New Rochelle, Mamaroneck and Irvington, and were under way in Ardsley, Ossining, Tarrytown and Greenburgh, while other places where basic activities were taking place included Rye, with a new zoning ordinance; Yonkers and Hastings, with new official maps; and Elmsford and Scarsdale, where studies looking toward the revision of the zoning ordinance were entered upon—besides accomplishments as to traffic, public parking, building codes, etc., in still other communities.

A committee to investigate means of promoting the recommendations of the Regional Plan of New York and Its Environs was appointed. A bill to authorize the support through municipal budgets of county planning federations in any counties having no regional planning boards was introduced in the Legislature, and is now a law. To assist building departments in the various cities and villages and to promote better understanding among them, a Building Officials Section was organized within the Federation.

Eleven bulletins on a variety of subjects were issued during the year, and ten well-attended meetings were held, at which a number of notable talks were given by experts both from Westchester County and from New York City.

On January 28, 1930, the completion of the third year was celebrated at the annual dinner and meeting held at the Hotel Belmont in White Plains, where special attention was directed toward the various county organizations which have cooperated with the Federation, and which form a unique group. They include, besides the Board of Supervisors and, particularly, the County Engineer's office, the Recreation Commission, the Conservation Association, the Chamber of Commerce, the Realty Board and the Civic Association, of Westchester County. Speakers representing various of these agencies were County Engineer Charles MacDonald, Mrs. Eugene Meyer, Jr., Chairman of the Recreation Commission, and Colvin Farley, Secretary of the Conservation Association. Thomas Adams, Director of the Regional Plan of New York, the honored guest, also spoke and praised the officers of the Federation for their fine record in the promotion of planning throughout the county.

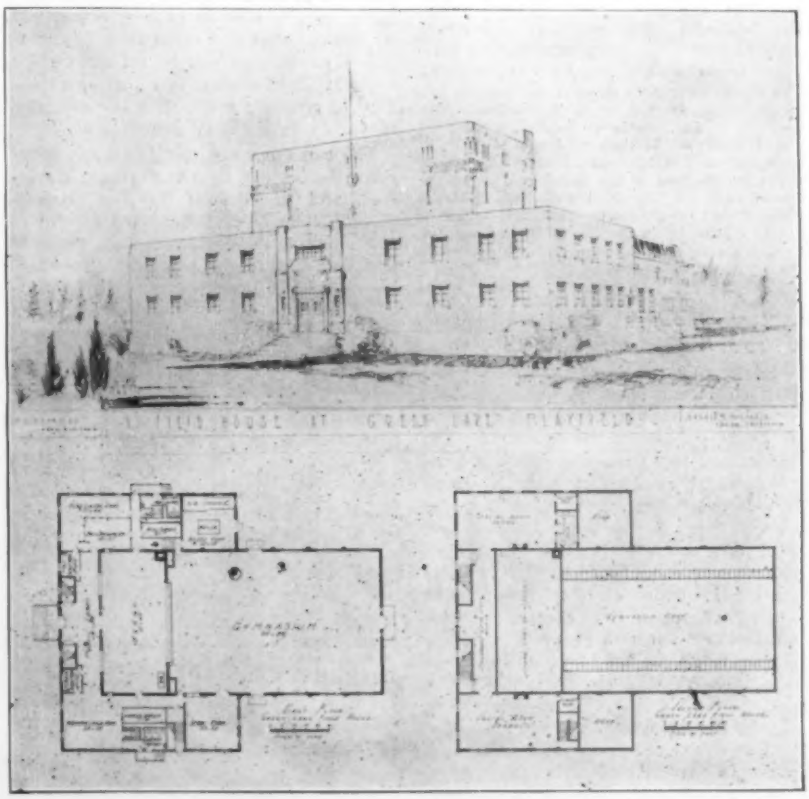
WELLS F. WISE,
Executive Secretary, Westchester County Planning Federation.

Bathhouses and Field-Houses for a Variety of Uses

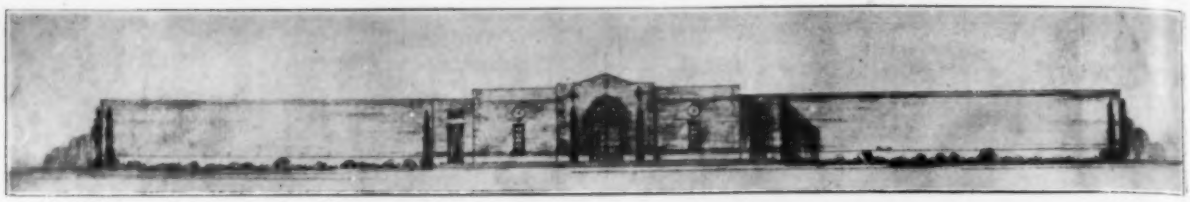
SEATTLE, WASH.—The Board of Park Commissioners of Seattle operates ten bathing beaches, a number of them functioning as integral parts of intensively developed waterfront playfields and parks. In connection with these areas, the Department has designed and built during the past two years a notable group of buildings—bathhouses or combined bathhouse and field-house structures.

Typical of the former group is the Madrona bathhouse, which is unheated, and is used during the summer bathing season only. It is 170 feet in length. Its central section has a width of 60 feet; the wings are somewhat narrower. The walls are of face brick and hollow tile, and the floors of concrete. The building, with the exception of the roof, which is of timber frame with tar and gravel surfacing, is fireproof. The inside trim is of vertical grain fir. The total cost of construction was $30,000. The cost of operation is about $3,000 for the 90-day season. Bag and locker systems are used, with 300 lockers for men and boys, 268 for women and girls, and 700 bags.

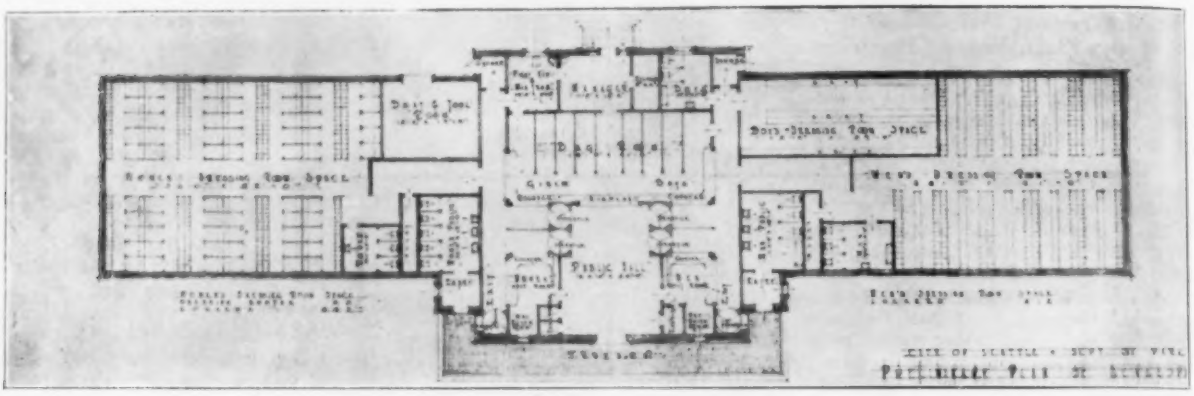
The Green Lake Playfield building is the finest example of the latter group. It is of reinforced concrete throughout, with an exterior finish of cement stucco, and cast stone trim. The interior is plastered throughout with the exception of the gymnasium ceiling, which is of sound-insulating material. The total cost of the building and equipment was $110,000. One of the most interesting features here is the 60- by 90-foot gymnasium with a 27- by 60-foot stage at one end. This room is readily convertible into an auditorium with a seating capacity of 750, while dur-



THE GREEN LAKE PLAYFIELD BUILDING



THE MADRONA BATHHOUSE FACADE AND FLOOR PLAN



ing the summer months the stage and adjoining locker and shower sections form a separate bathhouse unit. The second floor has two large social rooms, a large game room, and a kitchen.

This is a building that is used throughout the year for a variety of social and recreational purposes. The stage equipment is adequate for any ordinary dramatic purpose, and includes an all-steel fly gallery, with a capacity of 30 sets. The stage switchboard is equipped with dimmers in three colors for controlling the footlights, and three sets of borders.

J. L. BOSSEMEYER.
Landscape Architect, Park Department.

EDITORIAL NOTE: The Green Lake Playfield development, as designed by E. R. Hoffman, Park Engineer, J. L. Bossemeyer, Landscape Architect, and Donald N. McDonald, Architect, will be illustrated in The Municipal Index, 1930 edition, section on Progress in the Design and Construction of Park and Recreation Areas and Buildings, 1928-1929, and the Golden Gardens Park Bathhouse plan is reproduced in the section devoted to progress in the design and construction of bathhouses and swimming pools.

Two Texas Cities Plant Trees Along Connecting Highway

SHERMAN, TEXAS.—The cities of Sherman and Denison are about to plant a double row of sycamores and red oak trees on the highway between the two cities. The oaks will be two years old, and the sycamores ten or twelve feet high. The distance between the sycamores will be 50 feet and that between the oaks, the same, while the distance between oaks and sycamores will be 25 feet. The idea is that the sycamore of rapid growth will form an avenue of trees for this generation, the sycamores to be removed when the oaks reach the height where the sycamores interfere with the growth of these oaks.

Funds for the sycamores were raised by popular subscription in Sherman and Denison, while the oaks were donated by three Sherman men. The Texas Nursery Co. is under contract to cultivate and water the trees for two years, and to replace them when necessary during that time. These trees will be set out immediately.

Similar planting will also be made immediately for a short distance on the new highway west of Sherman, and probably for a mile on the new highway south of Sherman. All of this work west and south will be done by Sherman folks.

The distance between Sherman and Denison is more than seven miles, while more than a mile in each direction will be planted west and south from Sherman. All of these trees will be set out on the highway right-of-way two feet from the private property lines, with the approval of the State Highway Department.

The campaign was originated and sponsored in Sherman by *The Sherman Democrat*, and in Denison by *The Denison Herald*. The *Democrat* carried a total of 636 column inches of reading material and cuts during the campaign. In Sherman the Civic League sponsored the campaign put on by the *Democrat*, and in Denison, the Denison Garden Club sponsored the campaign put on by the *Herald*.

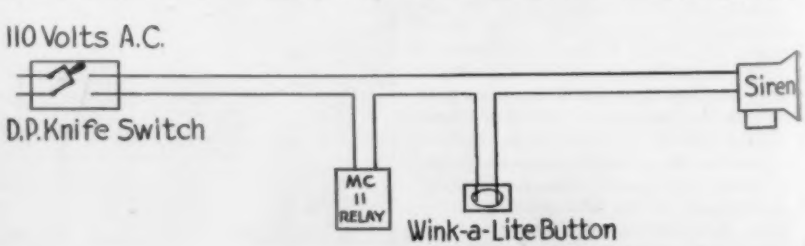
J. NEWELL JOHNSTON,
The Sherman Democrat.

Controlling a Fire Siren

MARIETTA, GA.—This city has only one fire station and two regular firemen, the remainder of the Department being made up of volunteers. The fire station is located approximately one block from the main square of the town, and the fire truck in answering calls has to pass through this square to go to any section of the town. To clear the square of traffic, a fire siren was installed on one side, and the control circuit was wired back to the fire station. At the fire station a small two-pole knife switch is used to energize the siren motor, and a relay was connected in this circuit. This relay is adjusted so that, when sufficient time has elapsed for the fire truck to have passed through the square, the relay cuts off the siren motor.

It was found that a pulsating sound from the siren was more effective than a steady sound, so a receptacle was inserted in series with one line to the siren, and a small "Wink-a-Lite" button was placed in this receptacle. This serves to interrupt the circuit to the motor at intervals and produces the desired pulsating effect.

R. S. PADEN.



FIRE SIREN CONTROL SYSTEM

Building an Adequate Recreation System in a Large City

CINCINNATI, OHIO.—Herewith, in the form of before-and-after illustrations, is told the story of the complete rehabilitation of Deer Creek Commons, now one of our largest and most popular athletic fields. This project involved the laying-out and equipping of a modern playing field, and provision of a recreation building. A similar transformation has been

effected at the Ziegler playground, where a new concrete swimming-wading pool has also been added to the facilities.

These are two of the items in a $650,000 recreational facilities improvement program for which public authorizations were made in 1927 and 1928, and which will be completed during 1930. Meantime, an additional million dollars for general recreational additions and improvements was assured by a four-to-one vote at last November's election, and $100,000 of this amount will be expended during the year of 1930.

This means that material advance will have been made toward remedying the existing situation which at the present time offers utterly inadequate means of keeping the children of our city off the streets and away from the influences of back alleys, pool rooms and such other haunts of misused leisure. New recreational facilities provided, or in process of being provided, include:

A large playfield in the West End.

A playfield-playground with concrete and steel shelter building, swimming pool, and hard-surface tennis courts at Madisonville.

A large playfield-playground in Oakley and a large playfield in Price Hill.

Additional land acquired for playgrounds at Pleasant Street and South Fairmont.

New concrete and steel shelter buildings at Hanna, Ziegler, Valley View, Hyde Park, Hoffman, Lytle Park and South Fairmount; and new hard-surface tennis courts at Mt. Echo, Inwood, and Sinton Park; also new concrete swimming-wading pools at Douglass, Sinton, Garfield, Hanna, Ziegler, Valley View, Hyde Park, Lytle Park, Hoffman, and South Fairmount playgrounds.

The general rehabilitation program looks to the provision of steel doors and window frames, electric wiring, chain link fencing, etc., in connection with all building developments.

These accomplishments represent a good beginning, but only a beginning, of the Public Recreation Commission's objective: "A safe, attractive place for every child to play, under the right sort of supervision." We must go on program-building over a number of years, and using public appropriations made and to be made, in such a way that we may achieve our objective without unstabilizing the tax rate or working any hardships on the taxpaying public.

WILL R. REEVES,
Director, Public Recreation Commission.

THE DEER CREEK COMMONS, CINCINNATI
The upper scene was transformed within a few months into a modern, efficient, well-equipped playfield

Bridge Entrances Marked by Powerful Red Warning Lights

OCEAN CITY, N. J. — In Cape May County, as elsewhere, nearly all the bridges are narrower than the roads; hence, vehicles approaching a bridge are in danger, especially after dark, of striking a bridge abutment or of going through the fence, if any, into the stream, unless they are given timely warning. We have recently installed a very effective type of warning signal at both entrances to the bridges used by vehicular traffic in the county, and feel confident that they will add largely to the safety of the thousands of visitors traveling over our roads, as well as of our own residents.

We have found by experience that an illuminated warning signal is so far superior to the ordinary signs and those which depend on the reflection of light from vehicles, that the slightly greater first cost is fully justified. The signals which we have installed are made by the Horni Signal Manufacturing Corporation, of an aluminum alloy which is practically everlasting in any atmosphere, and are equipped with a red lense that concentrates the light from a 100-candlepower lamp into a powerful beam which is plainly visible for a mile or more in fair weather and will penetrate fog or smoke for a long distance. The signals are light in weight but strong and rigid enough to withstand the very high winds which usually accompany the storms along this coast. They are connected to the street-light circuit and are turned off and on at the proper times with our other street lights.

These signals have been installed directly in front of the bridge abutment, facing toward traffic approaching on the right side of the road, so that the driver of any vehicle will have the powerful beam of red light constantly in view for a long time before he reaches the point of danger.

JOSEPH G. CHAMPION,
Director of Bridges and Public Buildings, Board of Chosen Freeholders, Cape May County.

Overhead Lighting for Safety Zones

CINCINNATI, OHIO.—Safety zones for car riders have been provided by this city in many streets. While these safety zones, or loading platforms as they are sometimes called, are used by the car riders, they also are used as safety islands by those pedestrians wishing to cross a thoroughfare having heavy vehicular travel.

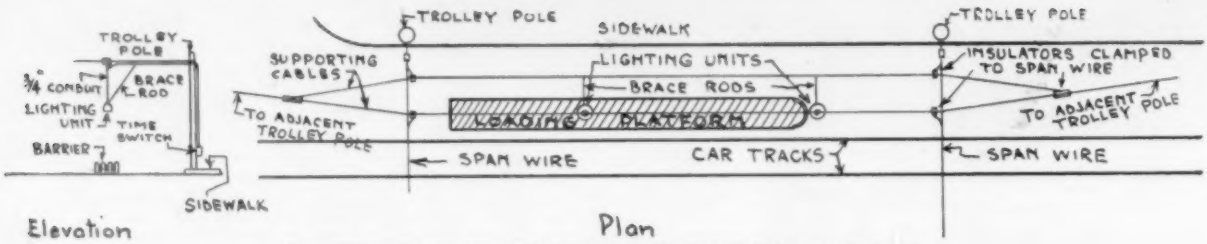
WARNING LIGHT AT ENTRANCE TO BRIDGE IN CAPE MAY COUNTY, NEW JERSEY

Without question they are well serving their purpose.

As these platforms are installed near the centers of the streets, in many cases accidents have occurred, resulting from drivers failing to see the obstruction and turn out of its way. Most of these accidents have occurred at night. Until the past year all loading platforms installed had been equipped with beacon lights. The purpose of the beacon light was to illuminate the barrier and warn an approaching motorist of the obstruction ahead. However, in cases where two, three, or more automobiles were approaching the platform, the first car frequently obstructed the view of motorists behind.

The height of the light source, which was approximately only 7½ feet above the surface of the platform, was the subject of many discussions. In experimenting with a light higher than the present position, it was found that because of the visors on automobile fronts, the range to which the light could be raised was very limited. When one suggests that a light be high enough to show above the car in front of it, some assumption must be made as to the distance between the two cars. If the light is high enough to show above a car very close in front, it could not be seen at all on account of the visor. If the second car is far enough back to permit of a reasonable height, the reason for having the light higher as a warning against a sudden turn of the front car, ceases to exist. Cincinnati found that the height of the beacon light as used was about as good as could be adopted when this form of lighting is used.

SAFETY ZONE AT NIGHT

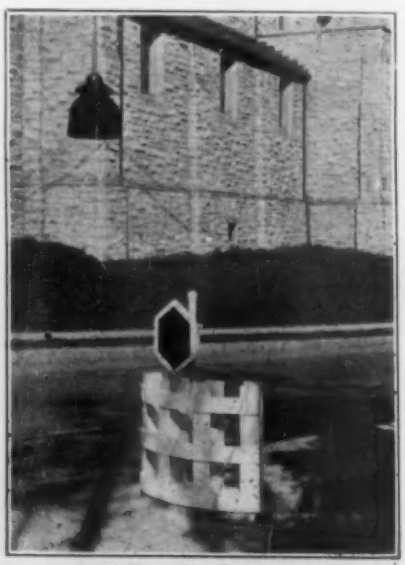


ILLUMINATION OF STREET-CAR LOADING PLATFORMS, CINCINNATI

Again, persons waiting for street cars have been held up and robbed. Such incidents might have been avoided if the platform was properly illuminated. Studies were made as to how these difficulties could be overcome. It was found that where streets are intensively illuminated, and where traffic moves at a moderate rate of speed, the beacon light is satisfactory. However, where the streets are not intensively illuminated, and traffic is allowed to move faster, some other form of protection is desirable.

With these things in mind, and also the fact that costs should not be increased, the following plan was devised by the writer.

The system consists of two red glass shades with white glass inner surface and an aluminum fixture that contains two adjustable porcelain sockets. The two sockets are wired in multiple and controlled from a 110-volt a.c. synchronous time-switch. The time-switch is so arranged that any predetermined time for setting may be used for the lights to go on or off. The fixtures, made by the Line Material Co., are supported from a ¾-inch galvanized conduit, fastened to a copperclad supporting wire. The sag in the wire is greatly reduced by slipping the wire through strain insulators and fastening to adjacent trolley poles. This arrangement overcomes any irregularity in the span wires supporting trolley conductors. The fixtures are mounted at such a height as to give nine-foot clearance between the bottom of the glassware and the surface of the street. One fixture is placed about at the center of the platform and the other approximately 18 inches in front of the barrier. It is important that the barrier itself be painted white. The inner white surface of the dome-shaped glassware reflects a strong white light downward, which illuminates the platform and persons thereon. The rays emitted through the glassware give a strong red light that is well diffused and can be seen for hundreds of feet. The fixtures are prevented from swinging into passing cars or trucks by a ¼-inch galvanized rod fastened to the conduit supporting the fixture and to a wire installed parallel to the supporting wire for the fixtures.



SAFETY ZONE END, BY DAY

The advantages of this type of lighting over the light given by the beacon are as follows: the installation cost is less; the platform is better illuminated and therefore can be seen from a greater distance by all vehicles; persons waiting for street cars can be better seen by the motorman and are better protected against robberies; the maintenance cost is less; any collision with the platform does not disturb the lighting fixtures; there are two obstruction lights instead of one; the possibility of the platform being without light is reduced; lamps are cleaned and replacements made more easily.

ROBERT J. STOCK.
Electrical Engineer, Department of Utilities.

Cleanly Disposal of Municipal Refuse

Three New Incinerators Constructed in New Orleans

By CARL SCHNEIDER
AIDE TO COMMISSIONER,
DEPARTMENT OF PUBLIC PROPERTY,
NEW ORLEANS, LA.

GENERAL EXTERIOR VIEW OF INCINERATOR C, WHICH HAS A CAPACITY OF 150 TONS. THIS IS SIMILAR TO INCINERATOR B

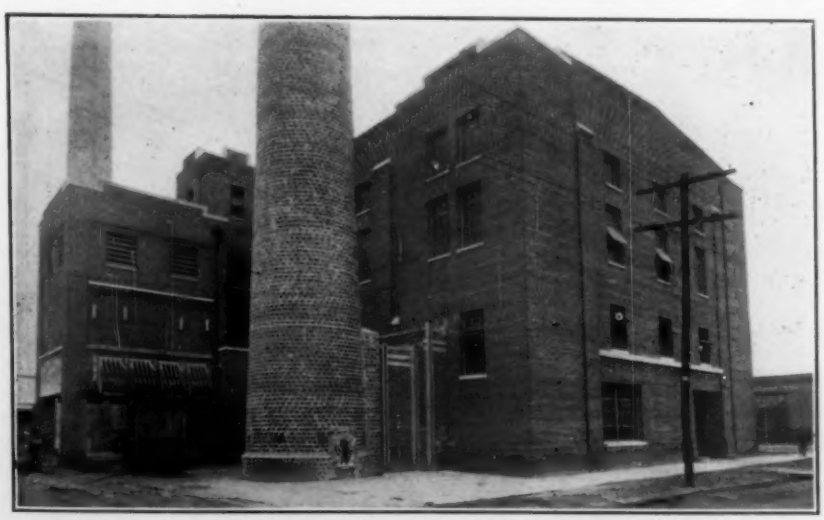
FOR a number of years, the citizens and officials of New Orleans have been looking forward to the time when the dumping of garbage and rubbish would be discontinued and modern refuse disposal plants would be constructed to solve this important municipal problem. With the completion of three new incinerators, their hopes are about to be realized. The new plants are now in operation and the collection forces and equipment are being arranged so that all of the city's refuse will soon be delivered to the incinerators. One dumping-ground will be continued for the disposal of large metallic articles and incombustible trade waste, and for the residue from the incinerators.

Sanitation Always Foremost

The city authorities of New Orleans, a good many years ago, had given a great deal of painstaking thought and study to the problem of refuse disposal, the first concrete result of their studies being the construction in 1916 of a Decarie incinerator to dispose of the refuse collected in Algiers, the 15th Ward of New Orleans, and located on the west side of the Mississippi River. This plant has a 24-hour capacity of 36 tons and is still in operation. It is operated only on one shift of eight hours.

It should be stated to the full credit of the early investigators that the fundamental idea of their studies was concerned with sanitation. While they carefully considered the possibility of revenues that might be obtained by salvage, utilization and sale of garbage by-products, they strongly recommended incineration as the ultimate means to employ for sanitary reasons. It was early appreciated that in order to secure the most economical results for refuse collection and disposal, the incinerator plants must be located close to centers of production, to reduce transportation costs. Consequently, none but the highest types of incinerators were considered, so that their operation would not be objectionable to neighbors.

In 1922 a second Decarie incinerator was constructed, having a capacity of 110 tons in 16 hours' operation. This was the first of five plants which were intended for the rest of the city aside from Algiers. Instead of four additional plants, only three additional were constructed, increased capacity being provided in these plants accordingly. The inability of the city to provide the funds necessary for the additional plants delayed further construction until the latter part of 1928, when contracts were awarded for the plants just completed. The construction of these plants was made possible through the sale of $7,500,000 public improvement bonds—a number of other public works being included in the program for which the bonds were sold. Of this amount, $1,250,000 was allotted to the purchase of sites, incinerators, stables and equipment for collection and disposal of garbage.



EXTERIOR VIEW OF REAR OF INCINERATOR, SHOWING CHIMNEYS AND ASH BIN

Negotiations Preparatory to Receiving Bids for the Incinerators

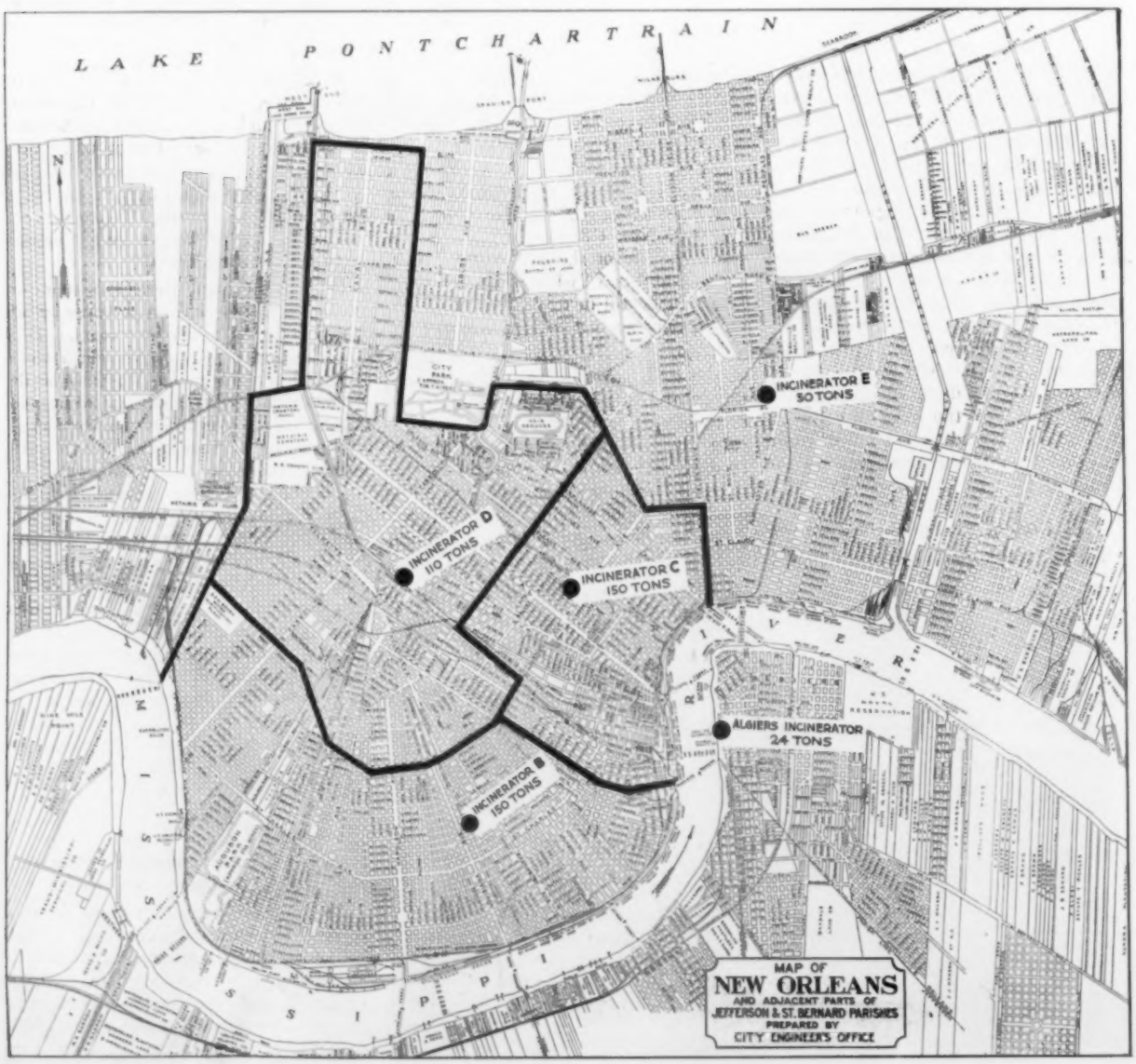
As the procedure followed by the city of New Orleans in securing bids for the incinerators was somewhat unusual, it is thought worth-while to give a concise explanation of the various steps taken in order to secure high-grade plants which would be especially adapted to local conditions and at the same time would not

COMPRESSOR AND SWITCHBOARD ROOM

entail extraordinary expense. It was realized that in order to get full competition on the incinerator plants, as well as on the buildings, detailed plans and specifications were necessary for the securing of bids.

Since the construction of the Decarie plant in 1922, the city authorities had become favorably impressed with the high temperature type of destructor. Accordingly, proposals were solicited from the Decarie Incinerator Corporation and from The C. O. Bartlett & Snow Co., the American builders of Sterling plants, for preparing detailed plans and specifications on which bids for the incinerators necessary could be secured. The specifications and plans were so prepared that any contractor qualified to do business in this city would be able to bid on the furnaces as well as on the buildings. The proposals from the Decarie and the Bartlett & Snow companies provided for the payment to these companies, by any successful bidder on the equipment, other than themselves, of certain royalties, supervision costs, etc., in return for which the companies would furnish bonds to the successful contractors that the plants would meet the guaranteed requirements.

As the plans to be prepared by said companies had to be approved by the city authorities, the layout of the plants and the details of construction were controlled by the city, much more so than would be the case were contractors bidding on their own plans that had not been prepared under the city's supervision. As the bids for the plants and for the building were taken separately, it is believed that the procedure followed



was instrumental in securing especially good competition on the complete program. New Orleans has not only secured excellent plants, but has done so at very reasonable figures.

Capacity of Plants—Costs

Of the plants constructed, two have a capacity each of 150 tons and one a capacity of 50 tons, based on operating two shifts of 8 hours each. The two large plants are identical in design and were constructed from the same set of plans. The small plant has been located in an outlying section, in anticipation of the growth of the city, and arranged so that eventually an additional unit can be installed, one end of the building being of temporary construction. A contract was awarded to The C. O. Bartlett & Snow Co. for the equipment for the three plants. The buildings for the large plants were constructed by James A. Petty & Sons, Inc., a New Orleans firm, and the building for the small plant was constructed by H. W. Bond & Bro., also a New Orleans firm.

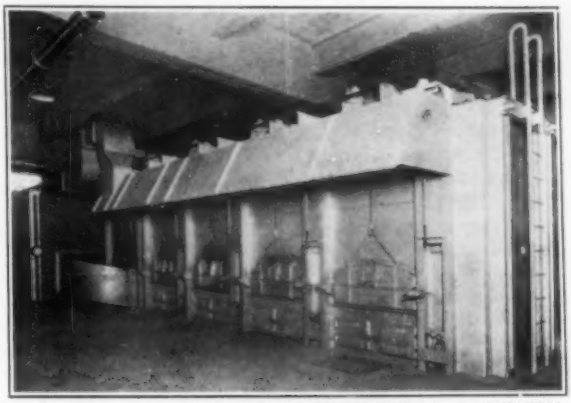
The expenses incurred by the city for the construction of the incinerators may be briefly summarized as follows:

Costs of sites	$135,000.00
Costs of buildings	255,000.00
Costs of equipment	390,000.00
Total	$780,000.00

The accompanying map of the city shows the locations of the various plants and the districts to be served by each. The city was very fortunate in being able to secure sites that were fairly central to the areas served by the plants. It is intended that all collection vehicles shall make direct hauls to the incinerators, except for those routes which are farther than 2½ miles from the plant; in such cases, the trailers will be assembled in trains and towed to the incinerators by tractors. As the average daily production is about 300 tons per day, there is ample reserve capacity in the sum total of all plants to accommodate the growth of the city for a good many years to come, particularly when it is remembered that the plants may all be operated on a 24-hour basis, whereas their normal rating is based on operating only 16 hours.

Description of Buildings

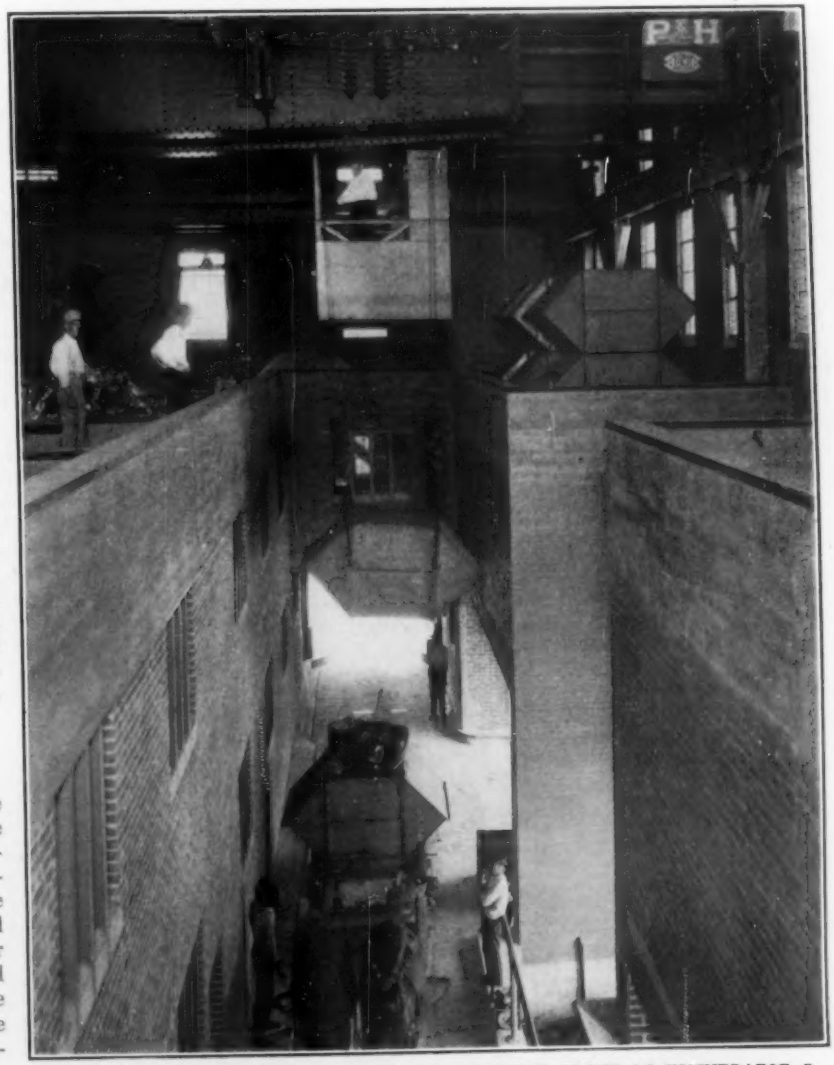
In the design of the buildings for the new incinerators, it was thought quite necessary that the general exterior appearance should be dignified and pleasing. Accordingly, the three plants have been constructed with exteriors of red face brick, having natural color mortar joints, trimmed with artificial stone, and fitted with factory type steel sash. The exterior view of the plant would lead one to believe that the building is of four-story construction, because of the placing of the windows. Such is not the case—there are really two main stories and a basement in the large plants, as well as in the small plant. Two rows of windows are in the upper floor, and there is a mezzanine floor over a portion of the building, which accounts for the spacing of the windows.



FRONT OF NO. 1 FURNACE AT INCINERATOR C, SHOWING THE FOUR CELLS

On the front side of the building there are three open bays, two of which are intended as turn-outs from the driveway, which passes through the entire length of the building, and the middle bay is used as a dumping-pit for receiving combustible commercial waste that is brought to the incinerator for disposal by business establishments. On the rear side of the building are the ash-bin, chimneys and flues. There are two areaways—one on either side of the ash-bin, with stairs to the basement.

Throughout the interior of the building, the brick and concrete wall and ceiling surfaces are a buff color; a gray wainscot has been painted up to the window-sill height, and all exposed

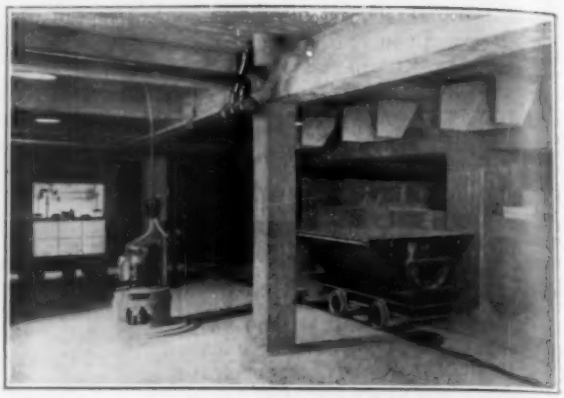


GARBAGE TRAILER BEING UNLOADED BY OVERHEAD CRANE AT INCINERATOR C

structural steel work has been finished in the same shade of gray. The floor slabs and roof slabs are of reinforced concrete construction.

The upper, or charging, floor covers the entire space within the building walls, although a large portion of it is open to the driveway for permitting the unloading of the trailers by overhead traveling cranes—two of which are operated in the larger plants and one in the small plant. As the trucks or trailers are unloaded by the traveling cranes, the bodies are stored on the floor, or the material may be charged directly into the furnaces. There are always kept on hand on the charging floor sufficient empty bodies for replacement on the trailers when they are unloaded. The opening to the driveway is surrounded by a curb 30 inches high, and the hoppers to the incinerators are equipped with curbings projecting 15 inches above the charging floor. The charging hoppers have flared tops, so that a minimum of handling of the material is required for charging the furnaces. Between the charging hoppers and the curbing of the driveway, there is placed a rack on which material that has an abundance of free water may be placed for the purpose of draining it before it is charged into the furnaces. From each end of the charging floor a stairway leads to the mezzanine floor.

The mezzanine floor on one end of the building is used as a locker- and shower-room for the plant employees. On the opposite end of the building the mezzanine floor provides an office for the engineer and a room for the switchboard and air compressors. From the mezzanine room on one end of the building, one stairway leads to the Scale Clerk's office and another stairway leads to a fan room, where the blower is installed for furnishing forced draft to the furnaces. Symmetrical with the Scale Clerk's office on the opposite end of the building, there is located a similar room that is used as a drivers' toilet. The fan room at either end of the building, and the office of the Scale Clerk and the drivers' toilet, are aproximately at the same grade or slightly above the grade of the driveway. Immediately inside of the driveway, a passageway extends the full length of the building behind the furnaces connecting the two fan rooms.



BASEMENT, SHOWING AN ASH CAR ON THE PLATFORM SCALE

The stoking floor is 4½ feet above grade, and the basement is 4½ feet below grade. The stoking floor is reached by a short flight of stairs from the passageway at the center of the building. Similarly, stairs lead down from this passageway to the basement, which is used principally for the handling of ashes, although a portion of it is set aside as a shop and storeroom for supplies. There are also located in the basement a sump pit and a pump for drainage purposes, and a platform scale for weighing the ashes. The lower landing of the elevator is just off the basement at the central portion at the rear of the building.

Description of Equipment and Handling of Material

Refuse is collected in trucks and trailers having removable bodies, the trucks being used in the commercial section. As stated previously, the bodies of the trailers and trucks are unloaded by overhead traveling cranes and either stored on the charging floor or dumped directly into the furnaces. Besides the convenience and economy of handling refuse in bulk in this manner, this scheme has the added advantage of providing a sanitary means of storing the material.

In each of the large plants there are two furnaces of the Sterling type, each having four cells, measuring 5 feet by 6 feet 3 inches grate surface. These furnaces are set right and left, a radial brick chimney lined to the top with firebrick being provided for each furnace. In the small plant the single furnace has only three cells of like dimensions as in the large plant. At the large plants the chimneys measure 5 feet 6 inches in diameter by 125 feet high. At the small plant the chimney is 5 feet in diameter by 100 feet high.

The exterior of the furnaces is finished with a buff color salt-glazed brick, and all iron and steel members have been painted with aluminium paint. These colors harmonize very well with the building interior. Hot forced draft is supplied to the furnaces by means of blowers, the intake sides of which are connected with air shafts from which ducts and hoods permit the exhaust of gases from the basement, as well as from the top and front of the furnaces. The waste gases of combustion from the furnaces travel through a bank of vertical tubes, around which the discharge from the blowers passes on its way to the furnaces. In the large plants each "regenerator," which is the name given to the bank of vertical tubes previously mentioned, has 125 5-inch tubes 7 feet long.

In the process of burning refuse that has been charged into the hoppers by the overhead traveling crane, the stoker controls the admission of refuse into the furnace by means of air rams fitted to a carriage which opens or closes the cover over the hole at the top of the furnace and at the same time actuates the gate at the bottom of the charging container. The refuse falls from the charging container to a drying hearth 45 inches wide at the rear of the furnace. The material

CHARGING FLOOR OF INCINERATOR C, SHOWING OPENING TO DRIVEWAY

that falls on the drying hearth from the hopper is permitted to remain there until it has dried out, or until the burning material over the grates has reached a satisfactory state for raking-on additional material from the hearth. The grates of each cell are surrounded by heavy castings, which are perforated and kept cool by the passage through them of the forced draft. Similarly, the clinkering door jambs and the arches over these door openings are provided with heavy hollow castings which are cooled by the forced draft. The clinker doors are lined with fire-brick and are each fitted with a small door to permit the entrance of stoking tools with a minimum of cold air entering the furnace.

Each cell of the furnace is operated independently of the others, in that the ashes can be removed without disturbing the adjacent cells, and individual control of the forced draft is permitted by a separate blast gate in the ash-pit of each cell; division walls between the ash-pits of the separate cells make this possible. When the refuse on the grates has burned out and ashes have accumulated to such an extent as to interfere with the admission of sufficient draft, the clinker doors are opened and the ashes withdrawn by hand from the grates. The ashes fall through openings in the floor directly in front of the furnaces into side-dump ash cars that have been spotted on tracks in the basement. The holes in the stoking floor are provided with removable steel plates for this purpose. A bank of nozzles permits the spraying of water across the path of the ashes as they fall into the ash-cars. The ash-cars are weighed before being sent up to the ash-bin by way of the elevator. The capacity of the ash-bin is sufficient to receive the ashes from a full day's operation. As the ash-bin is entirely independent of the rest of the plant, the removal of the ashes does not in any way interfere with the handling of the refuse delivered to the plant for destruction. In the small plant, the ashes are dumped into open-top containers similar to those employed for collecting refuse, and handled by the overhead traveling crane.

It is intended that in the future addition to this plant an elevator and an ash-bin will be provided, but under present conditions the traveling crane has sufficient time for handling the ashes, as well as unloading and charging the refuse.

Test Performance

The plants have recently been tested to determine whether they would meet the performance guarantees. The requirements of the specifications and the test results are indicated in the table.

In the design of these plants, special care was taken to build permanence into the structures and also to provide entirely satisfactory working conditions for the employees at the plant. Especially large and commodious locker-rooms are provided, and plenty of working space for the stokers and the ash-men results in preventing cramped surroundings. The lighting and ventilation of the building, the placing of several drinking fountains advantageously, and the numerous hose outlets, ample drains and sewer lines for washing down the floors and the pavement around the plant, have all been provided with the idea of maintaining a clean place of business and one in which the workmen may find it a pleasure to work.

SPECIFICATIONS AND TEST RESULTS

	Specification Requirements	Test Results Plant "B"	Plant "C"	Plant "E"
Quantity of refuse to be burned, tons	150 (B-C) 50 (E)	154.76	161.37	50.94
Grate area, square feet		250	250	93.75
Rate of burning, lbs. per sq. ft. grate surface per hr.	83.4	85.0	85.61	95.16
Labor rate, man-hours per ton engaged in burning	1.5 (B-C) 2.5 (E)	1.406	1.471	1.793
Electric power per ton refuse burned, exclusive of power used by cranes, kwh.	(not more than 3.0	2.48	2.41	1.965
Auxiliary fuel	None	None	None	None
Average temperatures, Fhr.				
Combustion chamber No. 1 unit		1500	1500	1640
Combustion chamber No. 2 unit		1450	1600	
Forced draft, No. 1 unit		330	330	350
Forced draft, No. 2 unit		340	320	

Dallas County Better Town Contest

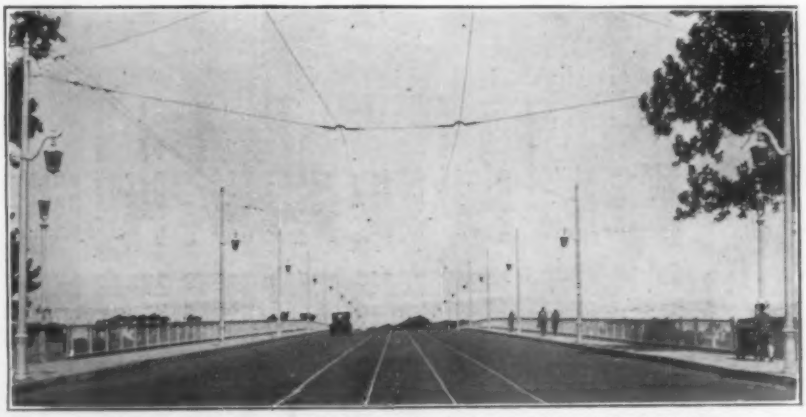
THE towns of Dallas County in cooperation with the Kessler Plan Association are conducting a campaign of civic improvement. The judges will make their first trip of inspection on or about January 1, 1930. Five other inspection trips will be made, the last inspection being on or near December 31, 1930. The first prize will be donated through the Kessler Plan Association, Dallas, Texas. There will be several other prizes.

The prizes will go to the towns making the greatest progress in civic development during the year 1930. The following items will be used in scoring:

		Points
A.	Business District	250
	(1) Attractiveness of buildings	40
	(2) Streets paved	40
	(3) Ornamental lights	30
	(4) Trees, grass, flowers along business streets	40
	(5) Adequate parking room	30
	(6) Alleys	20
	(7) Fire hazards	50
B.	Residential District	250
	(1) Streets—paved—dust—mud	50
	(2) Sidewalks—concrete—plank—dirt	50
	(3) Street trees	50
	(4) Alleys	50
	(5) Homes — paint — lawns, trees, flowers	50
C.	Water	100
D.	Sewer system—sanitation	100
E.	Attractiveness of school and church grounds and buildings	100
F.	Parks and playgrounds	100
G.	Educational campaign for civic development	100
	Total for perfect score	1,000

"Our Home Town," a booklet of special interest in connection with the Dallas County Better Town Contest, is obtainable on request from the Kessler Plan Association, Chamber of Commerce Building, Dallas, Texas.

An Attractively Lighted Bridge



THE NEW LIGHTING INSTALLATION ON THE NORTH END BRIDGE, SPRINGFIELD, MASS.

There are 38 octagonal pendant lanterns supported from the trolley poles by brackets at a height of 16 feet, and supplied with Bilux refractors and 2,500-lumen lamps. The trolley poles and metal guard in the concrete curbing are painted aluminum. The installation was designed by Carl K. Rannenberg, Deputy Superintendent of Street Lighting, and the lighting equipment was furnished by the Westinghouse Electric & Manufacturing Co.

Revenues and Expenditures for City Water Departments in New York State

Data for 1928, in 49 Cities, Gathered by the New York State Bureau of Municipal Information, Albany, N. Y.

City	Population	From Sale of Water	From Frontage Tax	Revenues: Interest and Penalties on Water Rents	Revenues: From Other Sources	Revenues: Total	Expenditures: Administrative and General	Expenditures: Operation and Maintenance	Expenditures: Redemption of Bonds	Expenditures: Contributions to Sinking Fund	Expenditures: Interest on Bonds	Expenditures: Total	Surplus 1928	Deficit 1928
Albany	117,820	$687,756.96	.....	.....	$67,968.65	$2,955,725.61	*	$625,892.82	$321,000.00	$5,000.00	$174,420.24	$1,126,313.06	.....	$170,587.45
Amsterdam	35,260	201,751.64	.....	$805.22	6,690.08	209,336.94	$36,634.85	43,244.74	6,000.00	40,000.00	11,086.25	194,704.36	$14,632.58	.....
Auburn	35,677	150,121.00	.....	1,266.69	17,449.11	168,836.80	22,671.06	103,892.11	24,000.00	.....	10,337.50	160,900.67	7,936.13	.....
Batavia	15,628	59,507.49	.....	220.40	2,736.02	62,463.91	3,500.00A	47,162.93	8,750.00	.....	4,103.00	63,515.93	.....	1,052.02
Beacon	11,621	39,642.08	.....	623.43	125.72	40,391.23	6,289.39	13,268.51	13,400.00	.....	11,316.23	46,274.13	.....	5,882.90
Binghamton	71,915	211,781.84	.....	.....	15,062.59	226,851.43	12,001.18	179,175.41	5,000.00	.....	3,905.00	263,081.59L	.....	36,229.15
Canandaigua	7,686	29,089.71	.....	412.57	1,761.90	31,264.18	4,888.94	12,090.93	6,000.00	.....	3,905.00	25,747.12	5,517.06	.....
Cohoes	23,345	123,406.52	.....	1,109.51	374.00	124,890.03	*	88,198.63	9,000.00	7,840.00	1,185.00	106,834.43	18,055.60	.....
Corning	15,722	60,484.39	.....	715.34	3,556.00	64,755.73	7,807.48	37,485.97	14,000.00B	.....	2,604.50B	61,897.95	2,857.78	.....
Cortland	13,879	Not segregated	.....	.....	.....	51,808.95	*	33,693.50	8,000.00	.....	14,098.91	55,792.41	.....	3,983.46
Dunkirk	19,912	68,112.24	.....	233.88	14,784.03	83,130.15	4,439.14	52,731.37	.....	14,620.63C	.....	71,791.14	11,339.01	.....
Elmira	48,359	Not segregated	.....	.....	.....	253,304.26	52,798.08	63,303.12	50,000.00	.....	48,318.94	214,421.04	38,883.22	.....
Fulton	12,571	48,839.01	.....	509.74	1,767.30	51,116.05	*	38,492.12	8,000.00	.....	.....	46,900.12	4,215.93	.....
Geneva	15,908	73,395.63	.....	511.81	3,161.64	77,069.08	14,371.66	35,257.62	12,000.00	.....	5,301.25	66,930.53	10,138.55	.....
Glen Cove	10,822	Private company	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Glen Falls	17,851	71,107.79	.....	.....	9,844.62	81,760.15	46,492.55	38,881.04	.....	.....	3,451.34	70,113.59	11,646.56	.....
Gloversville	22,110	64,530.88	.....	807.74	16,047.05	80,586.93	*	39,967.68	17,500.00	.....	3,451.34	80,384.44	201.96	.....
Hornell	15,784	60,456.45	.....	9.00	2,002.98	62,979.29	12,547.28	80,792.94D	10,000.00	.....	2,731.25	106,071.47D	.....	43,092.18
Hudson	11,755	16,898.79	.....	429.86	1,940.14	18,838.90	7,215.66	13,816.32	4,500.00	.....	225.00	25,756.98	.....	6,918.08
Ithaca	18,948	120,823.07	.....	.....	4,972.92	126,620.33	5,751.21	68,333.42	.....	15,000.00	14,285.00	103,369.63	23,250.70	.....
Jamestown	43,414	263,750.05	.....	1,360.06	15,804.83	280,914.94	98,602.66	59,249.82E	31,500.00	12,575.41	40,847.25	242,775.15	38,139.79	.....
Johnstown	10,712	53,471.05	.....	.....	10,619.17	65,090.22	16,265.84	20,914.80	10,000.00	5,650.00	62,530.64	80,384.44	.....	7,740.22
Kingston	28,009	145,327.00	.....	871.73	8,759.17	154,958.80	*	316,541.85F	30,000.00	.....	31,478.20	378,020.05F	.....	223,061.25
Lackawanna	20,196	Private company	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Little Falls	12,428	56,965.76	.....	.....	10,936.41	67,902.17	8,346.53	23,580.26	47,000.00	.....	4,516.25	83,452.04	.....	15,550.87
Lockport	21,676	78,662.69	.....	.....	.....	78,662.69	38,579.80	30,014.83	25,131.67	.....	8,871.92	102,598.22	.....	23,935.53
Long Beach	2,891	138,023.00	.....	.....	4,624.44	143,147.44	*	135,228.40	34,000.00	.....	63,698.25	233,526.65	.....	90,379.21
Mechanicville	8,514	35,968.79	.....	507.11	3,436.88	39,912.78	4,456.37	47,564.39G	12,000.00	.....	952.50	64,973.26G	25,060.48	.....
Middletown	20,412	Not segregated	.....	.....	.....	74,295.85	*	40,779.82	3,000.00	.....	11,581.00	55,360.80	18,935.05	.....
Mount Vernon	50,382	477,543.83	.....	16.00	11,016.78	488,578.61	19,946.82	262,332.88H	.....	75,250.00	94,937.50	452,467.20	36,111.41	.....
Newburgh	30,419	127,649.50	.....	.....	58,455.34	186,104.84	8,245.95K	87,471.64	21,500.00	.....	37,334.76	154,555.95	31,548.89	.....
New Rochelle	44,222	Private company	.....	.....	.....	.....	*	.....	.....	.....	.....	.....	.....	.....
Niagara Falls	57,033	306,425.12	.....	1,256.46	74,826.16	382,508.74	*	218,000.79	25,000.00	40,000.00	98,268.80	381,869.59	638.15	.....
North Tonawanda	17,356	75,015.20	.....	.....	365.07	75,380.27	3,495.61	77,619.63	40,000.00	.....	41,442.50	121,113.24	.....	45,734.87
Norwich	8,345	Private company	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ogdensburg	17,047	66,038.97	.....	345.39	81.91	66,466.27	*	30,909.08	14,000.00	.....	10,457.50	72,255.58	.....	5,789.31
Olean	21,332	74,599.44	.....	.....	8,763.66	83,363.10	3,599.93	54,154.22	14,500.00	.....	7,786.16	80,040.31	3,322.79	.....
Oneida	10,656	74,395.66	.....	829.21	37,040.46	112,265.33	17,993.88	12,059.94	11,000.00	.....	61,577.50	102,628.32	9,537.01	.....
Oneonta	12,057	70,560.82	.....	.....	3,309.50	73,870.32	8,043.71	40,633.34N	22,000.00	.....	5,445.00	76,122.05	.....	2,251.73
Oswego	22,369	94,080.67	.....	.....	9,666.50	103,747.07	7,856.34	79,514.58	23,500.00	.....	5,197.50	116,067.92	.....	13,320.85
Plattsburgh	11,552	65,298.74	.....	1,361.15	1,794.44	68,454.33	12,210.33	11,253.02	38,500.00	76.38	.....	.....	.....	.....
Port Jervis	10,507	Private company	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Poughkeepsie	35,670	218,542.34	.....	3,839.53	7,170.63	229,552.50	14,679.00	160,079.44	29,500.00	50,000.00	37,335.00	291,953.52	.....	62,401.02
Rensselaer	11,394	Private company	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rome	30,328	131,001.28	.....	702.04	2,356.16	134,059.48	9,981.50	41,821.84	100,000.00	7,388.00	24,324.60	183,516.94	.....	49,456.46
Salamanca	9,878	37,302.57	.....	.....	.....	37,302.57	.....	19,356.75	5,600.00	.....	2,330.83	27,287.58	10,014.99	.....
Saratoga	13,884	58,294.70	.....	.....	1,396.95	59,691.65	2,929.57	63,398.44	10,000.00	.....	2,139.50	69,467.51	.....	9,775.86
Schenectady	92,786	231,528.05	.....	879.35	10,915.47	243,322.87	*	141,211.75	42,000.00	.....	31,305.00	310,457.14M	.....	67,134.27
Sherrill	2,082	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Syracuse	182,143	850,380.39	20,302.92	8,047.72	23,297.42	902,037.45	.....	373,982.62	152,625.00	.....	237,451.25	764,058.87	127,978.58	.....
Tonawanda	11,292	56,888.46	.....	.....	3,401.75	60,290.21	887.78	50,292.06	24,200.00	.....	2,422.92	77,802.76	.....	17,512.55
Troy	72,223	337,071.89	19,247.50	.....	50,801.03	407,120.42	16,598.64	109,547.75	122,075.00	.....	68,041.19	375,587.89	31,532.53	.....
Utica	101,604	Private company	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Watertown	32,826	158,942.72	.....	186.25	8,903.45	168,092.47	12,195.41	62,478.10	34,000.00	.....	512.50	155,995.70	12,096.77	.....
Watervliet	16,158	114,704.49	.....	1,831.91	7,429.78	123,966.08	*	120,913.20	29,000.00	5,570.00	19,700.00	128,373.51	.....	4,407.43
White Plains	27,428	349,908.33	.....	5,388.13	14,485.73	369,782.19	*	194,993.83	30,000.00	.....	82,850.25	307,844.08	61,938.11	.....
Yonkers	113,947	639,811.89	64,065.24	.....	43,190.18	747,067.31	49,536.67	395,996.15	135,250.00	50,000.00	124,862.31	755,665.13	11,402.18	.....

*—Included in operation and maintenance.
A—A survey for new water supply
B—Includes sewer and water bonds
C—Depreciation reserves
D—Includes $42,890 for coagulating tanks
E—Construction
F—Includes $238,773.32 in addition to plant and equipment
G—Includes about $20,000 for new construction and land
H—Includes $221,331.31 for purchase of water
K—New improvements
L—Includes $63,000 for new building
M—Includes $95,940.39 for new improvements
N—Includes $16,000 for construction

AIRPORTS AND AVIATION

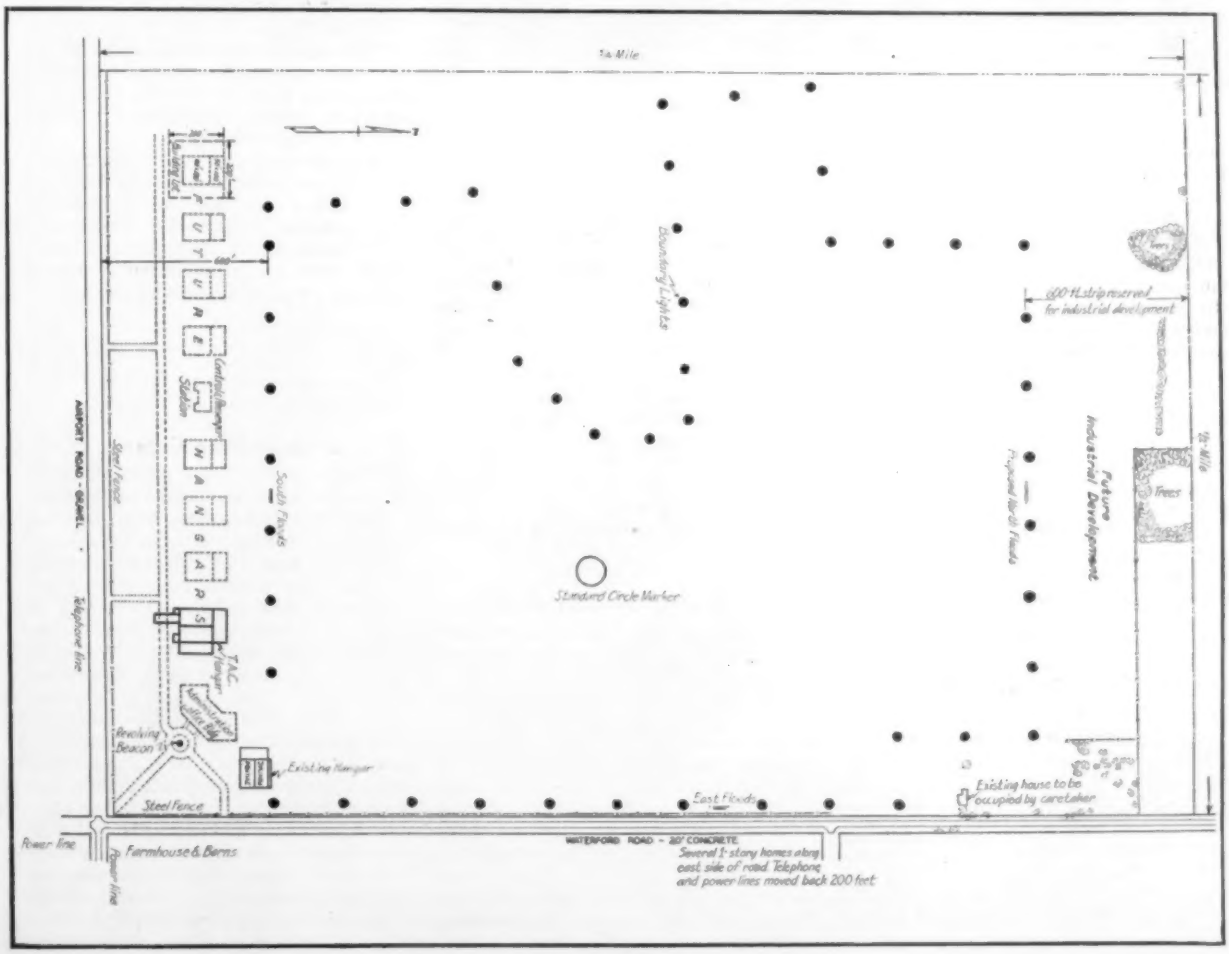
A Monthly Department on Aeronautical Activities of Municipal Interest
Conducted by ARCHIBALD BLACK, President, Black & Bigelow, Inc., Air Transport Engineers

Aircraft Accident Reporting

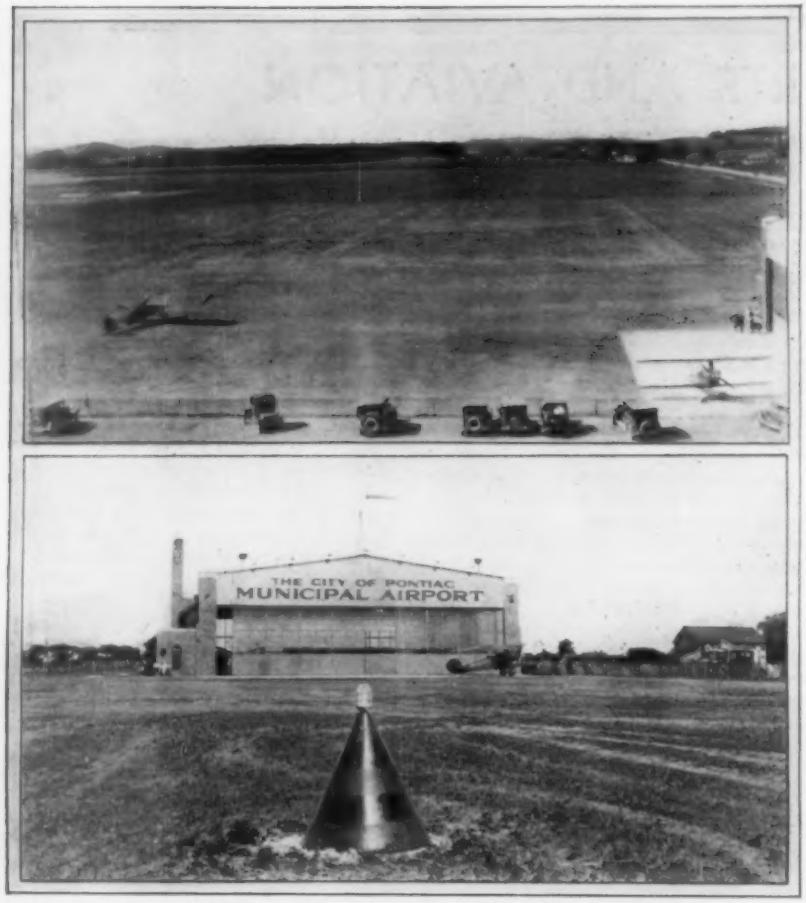
SINCE the inauguration of the Aircraft Division of the Aeronautics Branch of the Department of Commerce, this division has made investigations of all reported aircraft accidents. Up to the present, the policy has been to publish this information only in assembled form, at the end of each six months, in the form of vital statistics, giving the causes of accidents, by groups. No information is published as regards specific accidents, and the reports on investigations of the Department have been retained in its files as confidential. Recently some questions were raised in Congress regarding the advisability of requiring the Secretary of Commerce to publish a complete report of every aircraft accident. This policy the Department has not favored, for many reasons which appear to be absolutely sound. Present investigations are conducted informally and efforts are made to obtain information from all available sources as quickly as possible after an accident. The witnesses examined are usually willing to talk freely, knowing that the information which they give is to remain in the confidential files of the Department. The investigations are made by representatives of the Department with extensive experience in aviation, who are generally pilots themselves. There is no doubt that the publication of a detailed report of each airplane accident would considerably hamper the work of the Department in collecting statements from witnesses who would be more reluctant to talk if they knew in advance that the entire evidence was to be made public. In many of these accidents, personal acquaintances or friends of the witnesses are involved and there is a very natural tendency of the witness to refrain from putting himself publicly on record as giving evidence that would throw blame for the accident upon the dead pilot or possibly upon some personal friend. Where his evidence is not to be published, he is more likely to talk freely in this respect. Hence, the majority of those concerned with aircraft operation believe that the present method, at least for the time being, serves its purpose better than publication of the complete report of every accident. Under the pressure of this discussion in Congress, Major Young issued a statement of the position of the Department regarding accident report policy. As he pointed out, the summarized statistical information issued for six months gives the industry everything that is necessary for determining the causes of aircraft accidents as a whole.

First Airport Rating Issued

ANNOUNCEMENT was recently made by Clarence M. Young, Assistant Secretary of Commerce for Aeronautics, of the issuance of the first rating under the Airport Rating Regulations of the Aeronautics Branch of the Depart-



PLAN OF MUNICIPAL AIRPORT, PONTIAC, MICH.



MUNICIPAL LANDING FIELD AND HANGAR ,PONTIAC, MICH.

ment of Commerce. This first rating was issued to the Pontiac, Mich., airport, which has been graded as A-1-A, the highest permissible under the Department's regulation. In announcing the rating, Major Young said in part: "However, it is not intended that an A-1-A rating convey the thought that the ultimate in airport design has been provided. The ratings are convenient yardsticks and serve as a key to a detailed story about the airport and its equipment. . . . First, the rating is an aid to air navigation, as it tells the pilots and operators at a glance that certain minimum requirements as to general equipment and facilities, size and condition of landing area and night lighting equipment have been complied with. Second, as the Airport Rating Regulations set forth the fundamental essentials to the development of safe and efficient airports, they serve as a general guide to those responsible for such developments."

Airport Operations Limited by Injunction

A RECENT issue of *Airports* carries a story about the partial closing of the San Jose, Calif., airport, under an injunction restraining operation of the property for airport purposes. The injunction, which became effective on November 14 last, closes the field to all commercial operations, limiting its use to the air mail on the grounds that the air-mail planes arrive and depart at such hours as to limit the annoyance to surrounding residents. The injunction was obtained some time ago on the complaint of adjoining residents that dust from the field was ruining their homes and furnishings. Its application was held in abeyance upon the promise of airport officials to restrict the dust. Failure to do so resulted in this partial closing of the airport. While this situation apparently offers promise of solution by eliminating the objectionable features, it is worthy of note as indicating a growing tendency of the owners of surrounding property to object to certain features of airport operation, such as noise and dust, and it shows the necessity of conducting airport operations with the minimum of annoyance to surrounding residents.

Airport Descriptive Circulars

SEVERAL of the municipalities which established airports within the past few years have issued descriptive circulars on these airports. Among the circulars which have reached this desk from time to time may be mentioned those issued by the municipalities of Oakland, Calif.; Buffalo, N. Y.; Cleveland, Ohio; and Portland, Ore. The Industrial Bureau of Columbus, Ohio, issues a general booklet which includes an excellent description of the airport in that city. These circulars serve a very useful purpose, not only in advertising the city, but in furnishing to prospective users of the airport a very complete description of its facilities. Other municipalities might find the idea well worthy of consideration.

Women in Aviation

SO much interest in aviation has been shown lately by women, that a recent release of the Curtiss-Wright Flying Service devotes several pages to this subject, describing activities of individual women and organizations. Since the beginning of flying, we have had occasioml women pilots, but it is only within recent years that any number of women appear to have taken up flying. Among the interesting items in this Curtiss news story is the report of the organization of the Women's Flying Club of Maryland, the New York Women's Aviation Club, and the activities of an extended list of individuals. For probably the first time, a woman is reported as holding the position of test pilot for an aircraft company. Mrs. Keith Miller, who was recently appointed Chief Test Pilot for for the Victor Aircraft Co., of Mount Holly, N. J., recently took up one of its planes for its initial test flight. Mrs. Miller was one of the first to finish in the 1929 National Air Tour and was the prize winner in the first women's Air Derby. The total number of women pilots in the United States is now reported as 129, including 11 holding full transport licenses.

Aircraft Production and Operation

THE annual production report of the Aeronautical Chamber of Commerce of America gives some very interesting figures on aircraft production of last year in comparison with figures for 1928. According to this source of information, 4,761 military and commercial airplanes were produced in the United States in 1928, and 6,034 in 1929. The Department of Commerce Air Commerce Bulletin dated February 1, 1930, summarizes the status of aviation licenses as follows:

Pilot licenses active	10,596
Student permits issued to January 1, 1930	31,591
Mechanic licenses active	7,839
Airplane licenses active	6,753
Airplane identifications	3,153

Air Transport Rate Cuts

IN the month of January, the air transport routes of the United States made a very radical departure from previous practices in cutting the rates to approximately the same as the cost of traveling by rail. The present rates are so low that, even with substantial increase in traffic, it is very doubtful whether any company could avoid a loss. Operators, however, are undertaking a courageous experiment for the purpose of stimulating air travel. The intention of most concerns participating in these rate cuts is to build up the traffic to a point where high efficiency can be obtained in operations, so that a slight increase in the present rates would eliminate the present deficits and put the services on a paying basis. Even at this early date the tremendous effect of the rate cuts can be seen. Most of the lines are now carrying full loads, and even turning away passengers, where

formerly their airplanes were leaving with only a few of the seats occupied. One of the largest companies already finds that under this basis it is losing less money than it did under the high rates. By the time that still further increases in traffic appear, there seems to be no doubt that a moderate increase in the present scale will put most of the passenger routes of the country upon a paying basis. The immediate increase in travel following the fare reduction indicated very clearly that the former cost was undoubtedly the chief factor retarding the general acceptance of passenger travel by air.

The All-Metal Airship

WHILE we have been familiar with metal airplanes for several years, the metal airship is a more recent development, and it is interesting to note that this is a distinctly American product. The Zeppelin type of airship was a distinct advance over the flexible fabric gas bag, but it still retained the fabric type of gas container, carrying this inside the rigid structure. In the Metalclad airship, the fabric gas container is completely dispensed with and the hull is built of thin sheet-aluminum alloy stitched together by the use of aluminum rivets. This new type of airship is the invention of Ralph Upson and has been developed by the Aircraft Development Corporation, one of the divisions of the Detroit Aircraft Corporation. The first ship of this type was delivered to the United States Navy last summer and has since undergone very extensive tests. A very complete technical description appears under the title of "The Metalclad Airship," by Carl B. Fritsche, in the January issue of *Aeronautical Engineering*, published by the American Society of Mechanical Engineers. Another description of the Metalclad airship with a discussion of its advantages and disadvantages appears in a paper by Ralph Upson which was presented before the Society of Automotive Engineers at its Detroit meeting January 20 to 24.

Air Law

UNDER the title of the *Air Law Review*, a new publication, devoted exclusively to aeronautical law, has just made its appearance. This issue is a magazine of 182 pages, well gotten up and containing several articles by authorities in addition to abstracts of court decisions, and a bibliography of current legal literature on this question. Its sponsorship by the Law School of New York University establishes this newcomer as an authority in its field and one which will be of considerable value to the legal department of the municipality.

Boeing's "Flying Wing"

THE Northrop Aircraft Corporation Division of the United Aircraft & Transport Corporation has just completed tests of a rather unusual type of airplane resembling a "flying wing." Test flights have been made quietly within the past several months at the United Airport, Burbank, Calif., and elsewhere. The Northrop Flying Wing differs from the conventional airplane chiefly in the respect that it has no fuselage, the engine and pilot being carried entirely inside the wing. This is a type of design toward which there has been a distinct trend for some time and many airplane designers have accepted in principle the plan of virtually eliminating unnecessary resistance by making the entire airplane a large wing without body and with a retractable landing gear which is drawn up into the wing when the airplane is in flight. It seems quite likely that the airplane of the future may very much resemble this in type.

The Airport of the Future

THE *Architectural Forum* of January last contains an interesting article on the airport of the future, by Harvey Wiley Corbett, New York architect. This is a subject upon which considerable difference of opinion has existed and perhaps may continue to exist for some time. We have had two distinct schools on the subject of airport location. One has advocated locating the airport a reasonable distance outside of the city on an arterial highway or main line railroad providing rapid transportation to the center of the city. The other school has advocated bringing the airport closer to the city by locating it either on a waterfront or possibly even on the roofs of buildings. Perhaps ultimately we shall have both kinds. In Mr. Corbett's article, he seems to favor the thought of bringing the field close to the city and one of his illustrations shows an elaborate plan embodying a large roof, used for the landing area, with buildings below, and ramps by which the airplanes pass from the landing area to the terminal. In the same issue of this magazine, there is also an article by R. W. Sexton on airplane hangar design, including a description of the hexagonal hangar recently built by Western Air Express, at Los Angeles.

Zoning with the Clarity of Mud

To the Editor of THE AMERICAN CITY:

I have received two requests to interpret the front-yard provision of a Massachusetts town zoning by-law. Here it is:

"Front Yards: There shall be between every building and the adjacent street or streets a front yard or yards having a minimum depth of 15 feet, and in a residence district, where buildings on lots totalling three-quarters of the frontage of one side of a street between two intersecting streets have been set back more than 15 feet, such yard shall have a minimum depth equal to the maximum setback observed by all the buildings on such three-quarters of the frontage; *provided* that no front yard need be deeper than the average of the depths of front yards on the lots next thereto on either side, a vacant lot or a lot occupied by a building with a front yard deeper than hereinabove established being considered as though occupied by a building with a front yard of the depth so established; and *provided* further that on a lot held under separate and distinct ownership from adjacent lots and of record and less than 100 feet deep at the time it is placed in a general residence district the depth of no front yard need exceed 15 per cent of the depth of the lot."

I should like to ask your readers for their assistance in this task. I have been unable to fathom the meaning, if there is any, and I am wondering just how a building inspector would be expected to administer such a provision.

Recently a story was told about getting a $3 effect for 75 cents. The above draft of a front-yard provision might raise the question as to whether or not places do not get a 75 cent effect for $3.

At best, zoning by-laws are difficult for a layman to understand. I happen to know lawyers who cannot interpret the above provision, and I would respectfully suggest that more attention should be given to making such provisions understandable and workable.

EDWARD T. HARTMAN.
Boston, Mass.

Color for City Sidewalks

To the Editor of THE AMERICAN CITY:

I emerged from New Orleans' Union Station, turned into Baronne Street, and stopped and blinked my eyes in surprise. New Orleans, stronghold of conservatism, has defied convention and succumbed to the current fad for color by laying Baronne Street's sidewalks in a forest-green cement. The scheme originated with the merchants along Baronne Street, who lit upon the plan in their efforts to make that thoroughfare unique—a street to attract attention and, by inescapable corollary, business.

The Baronne Street merchants accomplished what they set out to do. Their green pavement has attracted so much attention that the idea is rapidly spreading and finding favor in many other cities and towns. In New Orleans the die-hards raised a hue and cry, of course, when the idea was first proposed, but the proponents of color in sidewalks have been victorious and preparations are now under way to repave Canal Street, New Orleans' main street, from end to end with red sidewalks, including the safety zone in the middle of the road.

Though this is the first time that any municipality has adopted the idea, color in sidewalks is no new thing. I have seen and trodden on colored pavements in California, and colored sidewalks were "all the rage" in Florida at the time of the collapse of the land boom.

The public has been slow to change from the natural white or gray sidewalks, but colored sidewalks, besides being equally durable and almost as cheap as the natural white or gray, are much more pleasing to the eye and, obviously, can be used to advantage to enhance and set off the appearance of the buildings upon which they abut, and there is no reason why they should not rapidly gain in popularity.

MORRIS H. WHITCOMB.
New York.

. . . . BIG TOWN thinking makes a small town GROW

SMALL towns become big towns and big towns become prosperous cities when public officials base their thinking on the future of five, ten, or even more years ahead.

¶ If a community is to grow, its growth must be definitely planned for. Water supply, sewage disposal systems, streets and roads, and other improvements must be provided that will be adequate for the increased population that the years are expected to bring. But *present-day appropriations* for these improvements seldom provide for much more than *present-day needs*. Therefore, if public officials are to build for the future as well as the present with the necessarily limited funds at their disposal, they must make every dollar do the work of two.

¶ To do this, to stretch their limited funds to the utmost, it is vitally necessary that the contract for each improvement be let at the very lowest cost consistent with good work. This can be done by getting the maximum *national* competition on all contracts—by advertising all calls for bids in the Official Proposal Columns of *Engineering News-Record.*

¶ Every issue of *Engineering News-Record* bears evidence of the growing interest of far-sighted public officials in the economical letting of contracts that results from the *national* advertising of calls for bids. From Alaska to Florida, cities and towns are finding that advertising in *Engineering News-Record* will save *them* money on practically every type of public construction.

¶ If you are far-sightedly planning for the future of your community, and if you are hampered by limited appropriations for public works, advertise your next contract *nationally* in *Engineering News-Record. Find out for yourself* why other progressive public officials are using this magazine in steadily increasing numbers and why *Engineering News-Record* is the Dominant National Proposal Advertising Medium.

If you would like more information about proposal advertising, write for a copy of the Proposal Form drawn up by the Associated General Contractors and ask for data on Engineering News-Record's national proposal advertising service. This material will be gladly supplied without any obligation to you.

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THE TAXPAYER'S DOLLAR

A Monthly Department of Budgeting, Assessment, Taxation, Accounting and Other Phases of Municipal Finance
Conducted by A. E. BUCK, National Institute of Public Administration, New York

Chicago and New York—What of Their Finances?

ONE usually associates meatless meals and heatless days with the exigencies of war, but just now this state of affairs seems to be in immediate prospect for the employees and wards of Chicago. This mid-western metropolis of over 3,000,000 population is now a cashless city. It has not met its recent payrolls; 40,000 city employees—policemen, firemen, teachers, and so on—are waiting for their salaries. It is unable to pay for its supplies—food, coal, and so forth—needed to operate its institutions. Indeed, Chicago is on the verge of bankruptcy. But its officials do not think so; they merely say that the city is temporarily "busted." Even so, if Chicago were a private corporation, it would have been put in the hands of a receiver months ago. It has not collected any taxes since 1928. It is reported to have borrowed $300,000,000 on tax anticipation warrants for current expenses, which means an annual interest charge of something like $15,000,000. The point has been reached where the local banks will not lend it any more money. An attempt has been made to interest New York banks in purchasing these warrants, but apparently without success.

Cook County is also in dire financial straits, as well as some 400 local governments within its boundaries, the largest of these being the city of Chicago. This county owes the state government more than $30,000,000, which is the state's share of delinquent and uncollected taxes. Its financial plight is therefore becoming a very serious matter for the entire state of Illinois. Governor Louis L. Emmerson has recently conferred with the local authorities on the situation, but seemingly to no avail.

A CITIZENS' COMMITTEE TO THE RESCUE

A citizens' committee, headed by Silas H. Strawn, has recently been formed. It has offered to raise as much as $50,000,000 to continue paying city salaries and coal bills. But Mayor Thompson and his cohorts at the City Hall are reluctant to accept the offer, hoping that they will be able to sell some $123,000,000 of warrants against the 1930 taxes. The committee's offer, if accepted, would be in the nature of a receivership, since it stipulates certain directorial powers over the city's finances. This is what Mayor Thompson and his supporters wish most of all to avoid, since it would tend to break the political grip which they now have on the city government. For this reason, we may expect the situation to get worse before it takes a turn toward improvement.

The Thompson administration is setting up an alibi by blaming the present crisis on the "reformers." In 1928 the State Tax Commission ordered a reassessment of all the property in Cook County, some 1,200,000 parcels of land and 900,000 buildings. Then the courts decided that the 1927 valuations were automatically made null and void by the reassessment order and that no taxes could be collected under them. This meant that no taxes could be collected on Cook County real estate until the new appraisal had been completed and reviewed. The appraisal has been completed, but there is now a political wrangle over the valuations in the Loop District of Chicago as compared with those in the remainder of the county. Mayor Thompson is claiming that the value of the Loop properties has been reduced by $300,000,000 and that the value of suburban properties has been greatly increased. It is stated, however, that the actual reduction for Loop properties is only $119,000,000. So the wrangle goes on, and in the meantime no taxes can be collected because the assessment rolls cannot be completed and the tax bills sent out.

"SELF-SUSTAINING" IMPROVEMENTS THAT ARE NOT

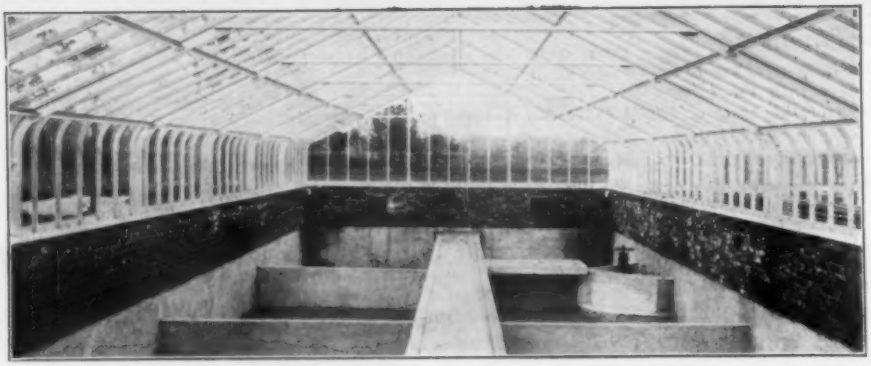
Stirred by the financial plight of Chicago, the *New York Evening Post* of February 1 carried an article by Paul Ambrose Tierney in which the fiscal methods of New York City were criticized, particularly those relating to municipal borrowing. Mr. Tierney calls attention to the fact that the city's indebtedness is going up at the rate of one hundred millions a year and that the 10 per cent of assessed valuation no longer sets a limit as it was originally intended to do, owing to the exceptions that have been made. Of these exceptions, the first was made in 1909, when the voters agreed to exempt from the city debt limit any borrowings required for subway construction and dock improvements, on the assumption that the current net revenue from these public improvements would be adequate to meet the interest and amortization charges. But Mr. Tierney says: ". . . it appears that the improvements contemplated under the amendment of 1909, which were to pay their own way, have not done so,

THE END OF A HONEYMOON

A REPRODUCTION OF NAST'S FAMOUS CARTOON ON THE TAMMANY RING IN THE DAYS OF BOSS TWEED

Cartoon by Sykes; both cartoons on this page by courtesy of New York Evening Post

Master Construction Glass-Overs for Sludge Beds



Glimpse in Glass-Over at Larchmont, N. Y. Being located in rather a prominent place the structure was made with curved eaves to give a pleasing effect. Frame work is steel. All woodwork is finest grade of "tank" cypress.

There's Over 75 Years Back of Our Expert Service on Sludge Bed Glass-Overs

Seventy-five years ago, we started specializing in Glass Enclosures.

When Sludge Bed Glass-Overs were first thought of, we at once started working them out with the country's leading Sanitary Engineers.

This resulted in our adapting our time-tested Master Construction for Glass-Overs. Now you can have full advantage of all that experience, and know you are getting the last word in Glass-Overs.

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We even own large tracts of standing cypress, so we can be sure every stick that goes into our Master Construction, is the grade best adapted to such exacting conditions.

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and that the $600,000,000 spent on docks and subways plus most of the interest on that sum, has been merely added to the city debt." Nevertheless, the voters at the November election of 1927 authorized another $300,000,000 for the construction and equipment of rapid transit lines, which is also to be outside the city debt limit. In connection with this article, the *Post* reproduced Nast's famous cartoon of the Tammany Ring.

This criticism of the city's fiscal methods called forth from Comptroller Charles W. Berry a reply in the form of a 15-page pamphlet, entitled "Why New York City Can Never Become Bankrupt," which was released to the newspapers on February 7. "'Never' is a dangerous word," as the *New York Times* points out editorially, but Mr. Berry has chosen to put his statement on that basis. He gives six reasons why the city cannot become bankrupt, as follows: (1) no obligation can be legally incurred in excess of the amount appropriated therefor; (2) the annual budget is obliged by constitutional limitations to bear a direct relation to the value of the taxable real estate contained within the city limits; (3) provision is made in every annual budget for any deficiency in the tax revenues on account of unpaid or uncollectible taxes; (4) the assessed valuation of the taxable real estate in the five boroughs which comprise the city, when taken as a whole, is less than the actual sale value of the property; (5) the sinking-funds of the city which are established pursuant to law for the redemption of the city's debt, are in excellent condition at the present time, having a surplus of over $36,000,000, in excess of the actual requirements; and (6) only one body—the Board of Estimate and Apportionment—has power to authorize expenditures of any kind; only one board—the Department of Taxes and Assessments—has authority to assess property for taxable purposes; and every constitutional or statutory limitation is observed to the letter. Mr. Berry discourses at some length on each of these reasons. On some points, however, he is rather vague. For example, he does not explain how the interest and redemption charges are being met on the bonds issued for public improvements which are supposed to be self-carrying. He also avoids the fact that the city's so-called budget does not exhibit the anticipated income and the proposed expenditures in a balanced relation; indeed, that it does not show any of the city's anticipated income and not all of its proposed expenditures.

On February 16, Henry H. Klein, former Deputy Commissioner of Accounts, gave out a statement in which he took issue with Mr. Berry, saying that "if New York City were a private corporation, it would be declared bankrupt." He went on to say: "The Comptroller in his statement does not disclose the city's total bonded debt. It exceeds $2,000,000,000 and the end is not in sight. At the present rate of expenditure the city's bonded debt should exceed $2,500,000,000 before the end of Mayor Walker's administration, and the annual cost of government will exceed $700,000,000."

Reassessment Work in San Diego

THE Board of Supervisors of San Diego County, Calif., says *The Public Dollar* for January, secured a private firm in July, 1928, to make a scientific reappraisal of all real estate in that county. The task was finished one year later and cost $315,000. The appraisal covered 550,000 parcels of property and included the preparation of tax and land value maps. Aerial photography was made use of. The total appraised value of the property in the county was fixed at $560,000,000, the basis of assessment for taxation being 40 per cent of that amount. In spite of the large number of appraisals, only 312 objections were presented to the board of equalization.

Philadelphia Faces Financial Difficulties

THE Philadelphia Bureau of Municipal Research recently pointed out in its bulletin, *Citizens' Business*, that the city government is now facing a serious situation because of the failure of the 1929 receipts to come up to the estimates. The real estate tax levy for 1929 was $65,100,000 in round figures. The City Controller estimated that $60,800,000 of this amount would be collected during the year. The receiver of taxes actually took in $56,600,000, or over $4,000,000 less than estimated. This shortage, equivalent to about 12½ per cent of the total tax levy, was not made up from other sources. In fact, the miscellaneous receipts also fell short of the estimate. From one of these sources, the Broad Street subway, nothing was collected, although the Controller estimated that it would yield $2,400,000. The shortage of receipts from all sources was $6,663,000. This amount, less $2,104,000 of unexpended appropriations on the books at the close of 1929, left a net shortage of $4,559,000, which had to be met by reducing the 1930 appropriations for policemen and firemen.

The Bureau asserts that this situation could have been avoided by more careful estimating. While the city charter provides a method for estimating the receipts of the general fund, the Bureau contends that the estimate is not binding on the Council except to set a limit on the amount it may appropriate. "There is nothing in the charter or elsewhere," says the Bureau, "that prevents Council from making a more conservative estimate of receipts and fixing a tax rate that is likely to produce the full amount of receipts needed." It was obvious late in 1928, the Bureau thinks, that the Controller's estimates for 1929 were too high, yet the Council accepted them.

Another serious situation, pointed out by the Bureau, is the failure of the City Council to make adequate appropriations to the sinking-funds. The Council provided for the payment of interest and sinking-fund charges on certain bonds used for the South Broad Street subway out of loan money. It might have gone further, if a controversy had not arisen over the proposal to pay all interest and sinking-fund charges on the Broad Street subway bonds in 1930 out of bond proceeds, instead of out of revenues. "This proposal," says the Bureau, "which originated with the City Controller, was widely condemned as legally doubtful, financially unsound, and a breach of faith with the purchasers and holders of city bonds."

The Council was even more determined in its effort to take advantage of surpluses in the sinking-funds. "Not only did it reduce the normal appropriations," says the Bureau, "by actual surpluses in the funds, but it reduced them by large additional sums through an erroneous method of computing the surpluses." Furthermore, surpluses in some sinking-funds were transferred to other funds and used to offset the normal appropriations in those funds. As a result, the sinking-funds will receive this year from appropriations about $4,500,000 to $5,500,000 less than is legally required. The Bureau estimates that this shortage just about equals the reduction made in the city tax rate.

New System of Assessment in Boston

BOSTON is in the process of completing a system of scientific assessment of property second to none in the country, says a recent issue of the *City Record*. Studies have been made, specialists consulted, and other cities visited in an effort to develop the latest and best practice.

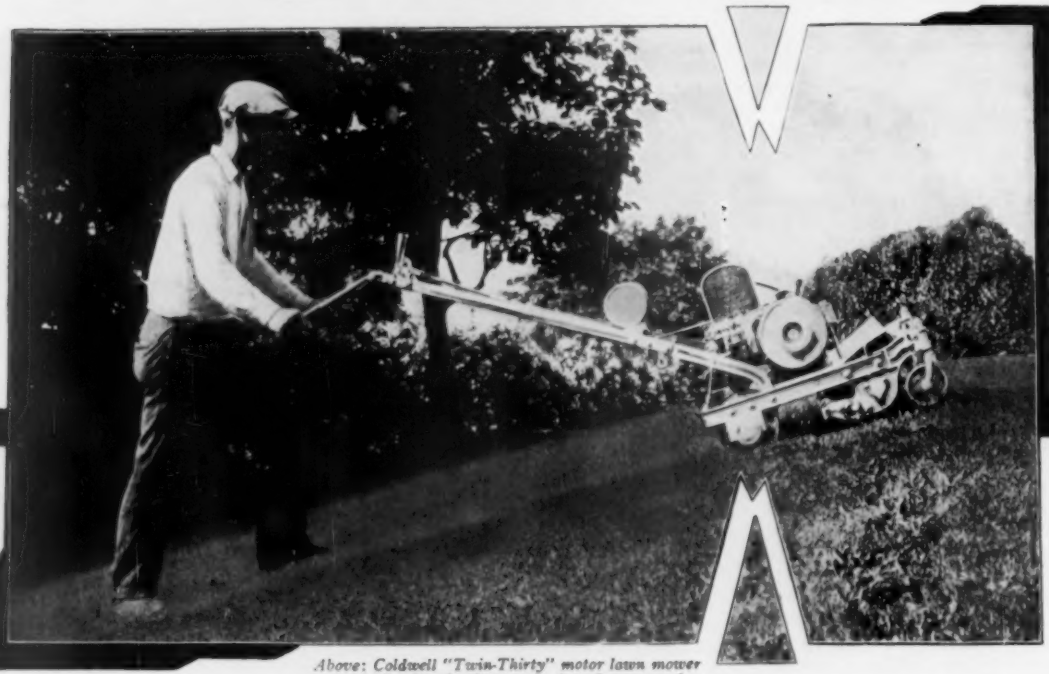
The first work of devising an assessment system was to obtain a map of the city, since there was none available, at least on a uniform scale. Many parcels of land were recorded, with the total areas but no dimensions given. A contract was entered into with a flying concern to make an air map of the city. This will record street and lot lines, showing frontages and depths, and will be on a uniform scale of 50 feet to the inch in the city and 100 feet in the suburbs.

To expedite the preparation of the map, an engineer and two draftsmen have been specially assigned to this work in the Assessing Department. "The engineer has been directed," says the *City Record*, "to proceed with the making of a larger and more comprehensive street plan of the city which is intended to be used for the establishment of the unit values, and the introduction of a system of scientific assessing based on the establishment of unit values and modeled to some extent upon the Cambridge principle of standardized unit values. . . . The theory of the system is based upon the establishment of a unit value for the street with a proportionate value fixed upon each lot, depending upon its frontage and depth, taking, of course, into consideration the corner, alley and other influences that might enhance the value of the parcel.

"It is also the intention to measure all of the buildings, and to place a unit value upon each of the different types. This will necessitate the examination of each building as well as the use of available building plans and the establishment of the contents of each structure."

SINCE 1867

COLDWELL POWER



Above: Coldwell "Twin-Thirty" motor lawn mower mows and rolls simultaneously 6 to 8 acres a day on one gallon of gasoline. Riding sulky may be had as extra equipment.

These men *know*

SUPERINTENDENTS of private estates, city parks, institutions and cemeteries prefer Coldwell Motor Lawn Mowers and Rollers because of their traditional dependability, ample power, economical up-keep and long life. The value, performance and ruggedness of these machines are completely and definitely established. All four models are constructed with equal care, from materials which have been rigorously tested to meet the exacting demands of rough, every-day usage.

The superiority of Coldwell motor lawn mowers is indisputably confirmed by results. Invite a demonstration on your own grounds. No obligation.

Literature descriptive of the line sent on request

COLDWELL LAWN MOWER COMPANY, NEWBURGH, N. Y., U. S. A.
IN CANADA—TAYLOR-FORBES CO., LTD., GUELPH
Manufacturers of ***Dependable Lawn Mowers****—HAND, HORSE, GASOLINE, ELECTRIC*

Firemen's Salaries, Hours, Etc., in 49 Cities

By THE MUNICIPAL ADMINISTRATION SERVICE

(To be followed next month by similar tables for police departments)

THE tables given herewith and next month present salary schedules and conditions of employment for firemen and policemen in a selected list of 49 cities between approximately 30,000 and 100,000 in population.* The data were obtained from questionnaires sent out by the Municipal Administration Service in 1929. The intention in gathering these figures was to present these data primarily for the uniformed forces of each department. In some cases, however, the officials replying to the questionnaire included other data. In interpreting these data, it was not always possible to determine whether or not the additional employees listed were members of the uniformed forces and they, therefore, in some cases, are included under the heading "Others." Chaplains, linemen, clerks, stenographers, etc., were excluded as were the detective forces in all police departments. In some instances, however, where it was felt that the information would be of value, the detective forces are mentioned in the footnotes. Mechanics were included because in some cities they are regarded as part of the uniformed force. The same thing is true of inspectors, alarm operators, etc. Policewomen are listed only as to number and salaries. Variations in individual cities and in branches within a single city are explained in the footnotes at the end of each table. In some cases, however, it was deemed advisable to omit slight variations in the hours of labor for some of the special employees listed under "Others."

In order to put the figures on a comparable basis, definitions accompanied each questionnaire sent out. These definitions were based upon duties, not titles. Therefore, if the duties were the same, differences in titles were disregarded. Furthermore, it was necessary to reconcile many apparent inconsistencies and variations in the footnotes. In cases of doubt it was assumed that when a position was listed under a column to which a definition of duties was attached, the duties of

(*Continued on page* 171)

* For compilations of similar data for cities over 100,000, see *Salaries of Policemen and Firemen in Thirty-Five Cities*, 1928, Municipal Administration Service. See also *Monthly Labor Review*, United States Bureau of Labor Statistics, Washington, D. C., December, 1929, and January, 1930.

TABLE I—FIREMEN—NUMBER AND SALARIES IN 49 CITIES OF 30,000 TO 100,000 POPULATION

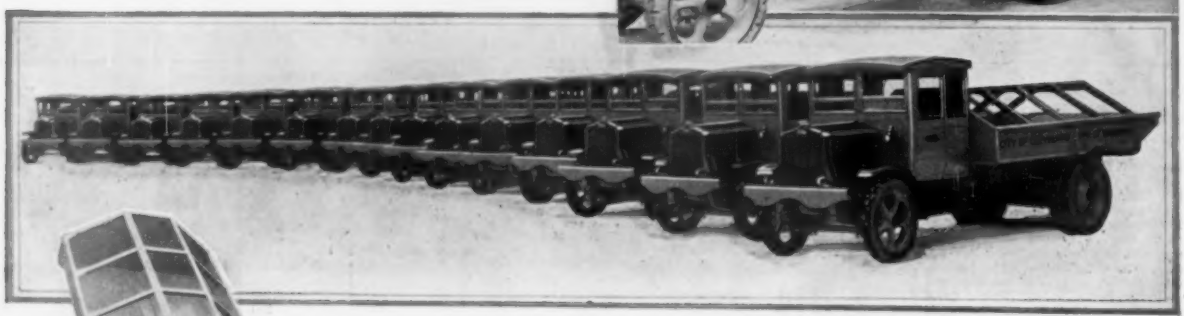
Salary rate is given by the year, month or day, as the case may be

Name of City and Population (1928 estimate)	Firemen No.	Firemen Rate	Steam or Auto Engr. No.	Steam or Auto Engr. Rate	Lieutenant No.	Lieutenant Rate	Captain No.	Captain Rate	Battalion Chief No.	Battalion Chief Rate	Deputy Chief Engineer No.	Deputy Chief Engineer Rate	Chief Engineer No.	Chief Engineer Rate	
Knoxville, Tenn. 105,400	95	$130–$150[1]	28	$159.50			1	$170.50			2	$210	1	$275	1 Master Mechanic at $ 225
															1 supt. of fire alarm at 200
Schenectady, N. Y. 93,300†	104;	1,650–2,000[2]					21	2,200	2	750, 850[3]	1	3,150	1	3,600	1 deputy fire marshal at 2,650
															1 asst. dep. fire marshal at 2,350
Wilkes-Barre, Pa 91,900	76	1,890	8	1,890	8	1,941	9	2,020	1	2,146	2;	2,940, 2,146	1	3,500	1 chief at 3,200
Sioux City, Ia. 80,000	69;	130, 140, 145			10	160	10	165			2	200[4]	1	250	
Winston-Salem, N.C. 80,000	Not Reported														
Portland, Me. 78,600	72	4.15–5[5]	8	1,915	17	1,915	18	2,015	1	2,380[6]	1	2,380	1	3,200	1 mechanical engineer at 1,915
Sacramento, Calif. 75,700	124	170–200[7]	18	215			35	225			2	275, 300[7]	1	350	2 mechanics at 208
Racine, Wis. 74,400	42	140–160[13]			8	170	9	175			2	150[8]	1	300	1 mechanic at 175
Chester, Pa. 74,200	Not Reported														
Terre Haute, Ind. 73,500	77	1,800			8	1,875	20	1,950			2	2,295	1	3,100	"
Springfield, Ohio 73,000	39	140	1	145	10	145	10	160			1	185[9]	1	200	1 supt. of fire alarm at 150
															2 electrical inspectors at 145
Lincoln, Neb. 71,100	37	135	22	135	9	145	9	155			2	185	1	260	"
Berkeley, Calif. 71,000	52	160–185	10	190	12	195	13	205	2	240, 250[3]			1	375	1 mechanic at 215
															2 switchboard operators at 190
															2 chief operators at 190
Niagara Falls, N. Y. 68,300	66	2,000	12	2,100			11	2,200			2	2,700	1	3,300	1 master mechanic at 2,200
Hoboken, N. J. 68,166†	182;	1,875–2,250[14]	18;	1,875–2,250[14]			24	2,750	1	3,750	2	3,750	1	5,000	
Bethlehem, Pa. 67,600	30	1,740	1	1,620					2	1,920			1	2,520	1 electrician at 2,160
Quincy, Mass. 67,600	81;	1,760–2,100[15]			12	2,300	2	2,400			2	2,500	1	3,600	1 supt. of fire alarm at 2,260
Topeka, Kans. 62,800	59	1,738			9	1,860	7	1,920			2;	2,400, 2,500	1	2,700[8]	
Pasadena, Calif. 62,100	66	160–190	16	205			12	225	2	250	1	320	1	400	"
Pontiac, Mich. 61,500	53		12	2,050			8	2,400	2	2,700[8]			1	4,000	1 master mechanic at 2,400
Lancaster, Pa. 58,300	40–18	125–35[21]	3	20[21]			8	135[21]	1	2,000[21]	1	2,400[21]	1	3,500[21]	"
Cedar Rapids, Ia. 58,200	25	145	14	145			10	155			2	175	1	205	"
Oak Park, Ill. 57,700	33	2,100			4	2,350	2	2,750					1	4,000	
Kenosha, Wis. 56,500	42	1,980	14	2,040	7	2,220	6	2,520	1	3,000[8]			1	4,000	1 supt. of fire alarm at 2,520
															1 electrical inspector at 2,520
Atlantic City, N. J. 54,700	217;	2,250–2,550					36	3,000	4	3,800	2	4,100	1	5,000	
Mt. Vernon, N. Y. 54,700	55;	1,800–2,200[22]					7	2,400			1	3,700	1	4,500	"
Springfield, Mo. 51,700	30	125	4	125	4	120	4	135	1	160[8]			1	200	"
Columbia, S. C. 50,600	25	125	10	137			6	140					1	200	3 assistant chiefs at 145, 160, 165
															1 chief at 225
															2 round drivers at 130
Madison, Wis. 50,500	37	135–150[21]	19	135–150[21]	5	165	4	172			1	188	1	275	"
Elmira, N. Y. 50,000	47;	1,560–1,800[23]	1	840[23]	6	1,860	7	1,920			2	2,220	1	3,000	1 supt. of fire alarm at 2,280
															1 master mechanic at 2,160
Bay City, Mich. 49,600	53	724–833[24]		[24]			20	9.20	2	9.88[24]	1	6.85[24]	1	8.22	2 switchboard operators at 4.44
															1 master mechanic at 4.94
New Rochelle, N. Y. 48,850	Not Reported														
Jamestown, N. Y. 46,600	52;	1,620–1,740[22]					12	1,860					1	2,000	1 electrical mechanic at 1,860
															2 assistant chiefs at 1,980
Brookline, Mass. 45,700	72	2,190	1	2,290	12	2,590	8	2,890			2	3,190	1	4,000	3 fire alarm operators at 2,990
															1 master mechanic at 2,590
San Jose, Calif. 45,500	46	175			11	182.50	11	190	1	225[8]	1	215[8]	1	330	1 hydrant inspector at 175
															1 fire inspector at 190
Austin, Tex. 45,133	Not Reported														
Hamilton, Ohio 44,200	27	150	14	150	5	155	6	155			1	160	1	200	
Stamford, Conn. 43,800	32	2,500	3	2,600	Volunteer		Volunteer						1	4,600	
Rock Island, Ill. 42,700	20	1,560			5	1,620	5	1,680			2;	1,740, 1,920[25]	1	2,400	1 mechanic at 1,620
Dubuque, Ia. 42,388	40	1,680	5	1,740	7	1,740	8	1,860					1	3,600	
Wichita Falls, Tex. 40,079†	31;	1,260–1,440	19	1,620			4	1,800	2	1,980	1	2,700	1	3,600	1 mechanic at 1,860
Superior, Wis. 39,671	41	160	18	162	6	167	6	172			2	222	1	265	
Wilmington, N. C. 39,100	Not Reported														
Lynchburg, Va. 38,600	43;	1,530–1,710[26]			1–1,740;	6–1,710	5	1,800			1	1,920[8]	1	2,700	1 master mechanic at 1,740
															1 mechanic at 1,710
Waterloo, Ia. 37,100	23	130–140[27]	14	140	4	145	4	160			1	170	1	225	1 fire inspector at 140
															1 supt. of fire alarm at 170
Moline, Ill. 35,600	22	135	5	140	4	140	5	145			2	155	1	200	
Sheboygan, Wis. 35,100	30	145	10	145	5	160	5	165	1	180	1	180	1	235	1 electrician at 170
															1 supt. machinery at 170
Oshkosh, Wis. 33,200	40	1,620			7	1,680	7	1,740					1	2,520	1 first assistant chief at 1,920
															1 second assistant chief at 1,800
LaCrosse, Wis. 30,400	37	1,680	1	1,800	1–1,740;	4–1,710	1–1,800;	4–1,770					1	2,700	"

NOTE.—Population figures marked † are from the 1920 census. For footnotes corresponding to reference numbers, see end of Table II.

CLEVELAND'S GARBAGE IS HANDLED EFFICIENTLY & ECONOMICALLY WITH WOOD EQUIPMENT

The problem of efficient, economical garbage collection was met in Cleveland by a recent addition of fifteen trucks fully equipped and suitable for rapid collection service. The units, shown here, were built to meet the city requirements. The bodies are 6-cubic yard capacity, Wood Type W-28, fitted with steel framework to support the tarpaulin covers. Wood Underbody Hoists provide the necessary steep dumping angle.



Everywhere, all over the world, cities, towns and villages have found that Wood hoists and dump bodies are efficient, economical and rapid in hauling and dumping. There is a Wood hoist and a Wood all-steel dump body to meet every municipal need.

Wood efficiency is demonstrated daily everywhere in commerce and industry. Just as the dump truck men find it "good business" to invest in Wood equipment, so do municipalities find it profitable to buy Wood hoists and bodies to serve their many activities. Write for Catalog 10 and see how Wood equipment applies itself to your needs.

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DETROIT

WOOD HOISTS & BODIES

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BRANCHES AND DISTRIBUTORS IN PRINCIPAL CITIES

Why not remember to mention THE AMERICAN CITY?

that position were the same or comparable.

No attempts were made to reconcile salary figures, by putting them all on the same basis, such as yearly income. Instead, the figures are reported as given on the questionnaires to the nearest dollar. Whether they are daily, monthly or annual, will be evident from inspection. It was felt that in this way, many possible errors might be avoided.

Tables I and II deal with fire departments, and tables III and IV (to appear in the April number) with police departments. Salaries and number of employees in each position are given in tables I and III and conditions of employment for all positions in tables II and IV.

The definitions accompanying the questionnaires as concerned with fire departments, were as follows:

Hoseman and Ladderman: Under immediate supervision, to attend fires and assist as directed in extinguishing them and saving lives and property. Perform related work as required, such as taking care of quarters, etc.

Steam or Auto Engineer: Under supervision, to drive and take care of motor apparatus.

Lieutenant: Under direction of captain, to command a fire-fighting platoon during an assigned shift. To attend fires and lead and work with men as directed. To be responsible for instructions, examination, deportment, efficiency, etc., of a given platoon. To assist captain in maintaining discipline. To be responsible for company records, etc.

Captain: Commanding officer, to be responsible for fire station and for fire-fighting efficiency and operation of a fire company. Responsible for attendance, instructions, examination, discipline and work of the company and maintenance of equipment. Requisitioning and disposal of supplies and properties. Immediate charge of the first platoon.

Battalion Chief: Under general direction, to be responsible for fire fighting efficiency in a battalion district. To command the operations of fire companies in the district. To make periodic inspections of records, apparatus, quarters, men and equipment. To instruct personnel.

Deputy Chief Engineer: Under direction, to assist in supervising the care, maintenance, repair and reconstruction of steam motor and chemical fire engines, water towers, trucks and other fire-fighting apparatus. To aid in instruction and examination of men in the operation of fire apparatus.

Chief Engineer: General command of entire fire-fighting service.

TABLE II—FIREMEN—CONDITIONS OF EMPLOYMENT

City	Platoons	Hours on Duty: Day (D, day; N, night)	Hours on Duty: Week	Annual Clothing Allowance	Annual Value of Uniform	Reimbursement for Clothes Ruined on Duty	Pension	Annual Pension Dues	Relief Fund for Death; Benefits	Annual Relief Fund Dues	Annual Sick Leave with Pay	Annual Vacations with Pay	Other Leave with Pay per Year
Knoxville, Tenn.	2	11 D, 13 N		None		None	Yes	½% of salary	Yes[41]	1% of salary	60 days	14 days	None
Schenectady, N. Y.	2	24-24[2]	[1]	Caps, rubber coats, boots and helmets		None	Yes	1% of salary	Yes	$12[2]	Indefinite	15 days	182[3]
Wilkes-Barre, Pa.	2	10 D, 14 N[3]	72[3]			None	Yes	$9 per year	Yes	$9	No stated amt; half pay	15 days	None
Sioux City, Ia.	2	24-24		None		None	Yes	½% of salary	No		Full time sick and accident	16 days	None
Winston-Salem, N. C.	Not	Reported				None	Yes		Yes				
Portland, Me.	No	24		Rubber coats and boots		None	Yes	None	Yes	None	14 days	16 days	1 day in 6
Sacramento, Calif.	2	10 D, 14 N[39]		None				No dues	Yes	$12	30 days[11]	14 days	53
Racine, Wis.	2	24-24		None		None	Yes	1% of salary		$2	No restriction	15 days	
Chester, Pa.	Not	Reported											
Terre Haute, Ind.	2	24-24		None		None	Yes	$12	$200death	[4]	None[6]	14 days	None
Springfield, Ohio	2	24-24		None		None	Yes[12]	$1	None		30 days	15 days	6 mos. for injuries
Lincoln, Neb.	2	24-24[13]	96	None		None	No	None[14]	Yes	$12	14 days	14 days	14 days
Berkeley, Calif.	2	10 D, 14 N	70 D, 98 N	None		None	Yes[16]	None	Yes[17]	None[15]	[17]	14 days	1 day in 5[17]
Niagara Falls, N. Y.	2	24-24		Coat, cap & helmet		None	Yes	1% of salary	No		No limit	14 days	None
Hoboken, N. J.	2	10 D, 14 N		None		None	Yes	2% of salary	Yes[14]	None[14]	Indefinite	16 days[14]	
Bethlehem, Pa.	2	10 D, 14 N[15]	70 D, 98 N	1 uniform	$40	Replaced by city	No		Yes	$2	30 days	10 days	None[15]
Quincy, Mass.	2	10 D, 14 N		None		Rubber goods	Yes	None[15]	Yes	$1 per death	9 weeks	14 days	None
Topeka, Kans.	2	12[20]	84				Yes		Yes			14 days	Disability
Pasadena, Calif.	2	10 D, 14 N	60 D, 84 N	None			Yes[16]	None	Yes[20]	$6	30 days	12 days	61 days
Pontiac, Mich.	Yes	24					No				Unlimited	14 days	
Lancaster, Pa.	No	48-24		Suit, cap, rubber coat and boots	$2,180[22]	None	Yes	2% of salary	No		During sickness	7 days	
Cedar Rapids, Ia.	2	24-24[27]					Yes	1% of salary	No		30 days[27]	15 days	
Oak Park, Ill.	2	24-24					Yes	1% of salary	Yes	None	Indefinite	15 days	Granted only by chief
Kenosha, Wis.	2	24-24					Yes	1% of salary	No		6 months	14 days	Special leave for good cause
Atlantic City, N. J.	2	10 D, 14 N	78 D, 90 N	$50			Yes	4% of salary[21]	Yes			2 weeks	
Mt. Vernon, N. Y.	2	10 D, 14 N			$2,500[23]	Cleaning and repairs	Yes	1% of salary			Full pay	14 days[24]	
Springfield, Mo.	2	24[25]	84[25]	None			No		$300death	$12	All	14 days	
Columbia, S. C.	Yes	12	84	2 uniforms per year	$2,900[23]	None	Yes	None	Yes	None	1 year	15 days	None
Madison, Wis.	2	24-24[30]					Yes	1% of salary	Yes	$3	10 days	2 weeks	
Elmira, N. Y.	2	11 D, 13 N[26]	94	None		None	Yes	$30	None		60 days	14 days	None
Bay City, Mich.	Yes	24	84				Yes	None	Yes	$18	Reasonable time for accidenton duty[29]	14 days	
New Rochelle, N. Y.	Not	Reported											
Jamestown, N. Y.	2	10 D, 14 N					Yes	[32]	No		30 days	15 days	
Brookline, Mass.	2	12	72				Yes		Yes	$1	30 days	2 weeks	
San Jose, Calif.	Yes	10 D, 14 N		None			Yes	None[18]	Yes		20 days	14 days	None
Austin, Tex.	Not	Reported											
Hamilton, Ohio	Yes	11 D, 13 N[33]		$70	$50		Yes	None[33]	Yes	$3	None	12 days	None
Stamford, Conn.	2	10 D, 14 N		None			Yes	2% of salary	Yes	$7.80	Indefinite	18 days	1 day in 6
Rock Island, Ill.	2	24					Yes	1% of salary	No		No limit	15 days	None
Dubuque, Ia.	2	24	96 or 72				Yes[34]	1% of salary	No			15 days	
Wichita Falls, Tex.	Yes	10 D, 14 N					No		No		Unlimited	10 days	None
Superior, Wis.	2	12	84	All rubber goods			Yes	1% of salary	Yes	$6	Duration of illness	14 days	None
Wilmington, N. C.	Not	Reported											
Lynchburg, Va.	No	24		Depending on need	$16		No		Yes	$6	None	14 days	1 day in 4
Waterloo, Ia.	2	24-24		Rubber, pants, coats and boots			Yes[19]	1% of salary	No		None, unless injured on duty	14 days	
Moline, Ill.	2	24-24		$60	$60		Yes	1% of salary	Yes	None	1 year	15 days	None
Sheboygan, Wis.	2	24[37]		Helmets and rubber coats			Yes	1% of salary	Yes	$12	Full pay	15 days	
Oshkosh, Wis.	2	24-24		None			Yes	1% of salary	Yes	$3	6 months	10 days	None
LaCrosse, Wis.	Yes	12[39]	84	None			Yes	1% of salary	Yes	$1.50	None	14 days	None

[1] $130, first year; $135, second year; $142.50, third year; $150, fourth year.

[2] 11 volunteer fire companies, totaling 385 men, not paid.

Salaries: Firemen, $2,000, first grade; $1,850, second grade; $1,650, third grade.

Hours: Chief engineer, deputy chief engineer, and fire marshals on duty 24 hours per day, 5 days (120 hours), per week.

Benefit Fund: The Permanent Firemen's Association also maintains a death benefit fund, which pays $1,075.

Vacations: Captain, 18 days; chief engineer, 30 days; deputy chief engineer and fire marshal, 21 days.

Leave: Chief and deputy chief engineer, and fire marshals, 104 days.

The two battalion chiefs are volunteer chiefs, elected annually.

[3] Hours: Battalion chief and chief engineer, days only, first and second assistant chiefs, 24 hours on and 24 off. Battalion chief, chief engineer, and first and second assistant chief engineers work 84 hours per week.

[4] Salaries: $4.15, probationers; $4.25, first year; $4.50, second year; $5.00, third year.

Battalion chiefs are called district chiefs.

[5] Covered by pension law.

[6] Opposite shift covers work.

[7] Salaries: $170, first year; $180, second year; $190, third year; $200, fourth year.

Deputy chief engineers called first and second assistant chiefs.

Makes a little

ROAD MONEY

work like a LOT

No development of recent years has so universally appealed to highway officials as Tarvia "Re-Tread."

No elaborate organization or expense equipment is necessary to do a perfect job with "Re-Tread." A skid-safe, easy-riding, durable road surface that compares favorably with any type of pavement can be built on short notice and at exceedingly low cost.

Tarvia "Re-Tread" is a mixed-in-place combination of crushed stone, slag or crushed gravel and a special Tarvia developed particularly for this method. On any strong road base, new or old, "Re-Tread" provides a pavement that is completely satisfactory to road officials, taxpayers and motorists.

The Tarvia field man will gladly tell you more about "Re-Tread." Phone, wire or write to our nearest office.

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[9] Called assistant chief.
[9] Called assistant chief engineer.
[10] Assistant chiefs, chief engineer, and mechanics work 8 hours, but are subject to call 24 hours per day.
[11] With full pay; half pay indefinitely thereafter, at the discretion of the civil service board.
[12] Half pay after twenty years.
[13] Salaries: $140, first year; $150, second year; $155, third year; $160, fourth year.
[14] Salaries: $1,875, first year; $2,000, second year; $2,150, third year; $2,250, fourth year.
Relief Fund: Paid by Firemen's State Relief Association. Funds are obtained from a state tax of 2% on the business of foreign fire insurance companies.
Vacations: Captains, 20 days; chief, 30 days.
[15] Hours: Auto engineer and electrician, 10 per day; battalion chief and chief engineer, 24 hours, with 1 day in 7 off.
[16] Under state law.
[17] Relief Fund: Pays $1,000 benefit after 10 years' service.
Sick Leave: More than six months' service but less than 1 year, 10 days; 1 to 5 years, 30 days; 5 to 10 years, 45 days; 10 to 15 years, 60 days; over 15 years, 90 days.
Days Off: Chief engineer at his convenience.
[18] Salaries: $1,760, first year; $1,870, second year; $2,100 third year.
Pension Dues: Paid by city.
[19] Hours: Mechanics and inspectors, 8 per day, 48 per week.
[20] Relief Fund: Pays $3.00 per day of sickness up to 1 year.
[21] On call. Call men are subject to call at all times; remain in stations from 10 P.M. until 6 A.M., with every eighth night off. Engineers on call do not stay in quarters.
[22] Salaries: $2,200, first grade; $2,000, second grade; $1,800, third grade.
[23] Probably total for department.
[24] City pays additional 2 per cent.
[25] Chief and deputy chief, 21 days.
[26] Chief on duty or subject to call 168 hours per week. Mechanics, 72 hours per week. Inspectors and mechanic 12 hours per day.
[27] Hours: Superintendent and assistant superintendent of fire alarm, 8 hours per day; inspector, 9 per day; chief engineer, no set hours.
Additional time for special cases.
[28] Salaries: $1,800, first grade; $1,740, second grade; $1,680, third grade; $1,560, fourth grade. Auto engineers on call. Hours: Chief engineer, 9 per day, 54 per week.
[29] Salaries: $7.24 per day, first six months; $7.90, second six months; $8.88 thereafter. Firemen and second and third assistant chiefs paid for 182½ days per year; others, 365. Auto engineer included in "firemen." Deputy chief engineer called first assistant chief. Battalion chiefs called second and third assistant chiefs.
Chiefs and assistant chiefs get full time for illness and accidents occurring while on duty.
[30] Hours: Chief engineer, 9 per day; electrician and assistant electrician, 10; inspector, 8.
[31] Salaries: $135 per month, first year; $140, second year; $145, third year; $150, fourth year.
[32] Salaries: $1,620, first year; $1,680, second year; $1,740, third year.
Pension dues based on salary; figures not given.
[33] Chief and deputy chief engineer, 24 hours. Pension under state law.
[34] Chief engineer not under pension system.
[35] Called first and second assistant chief engineers.
[36] Salaries: $1,710, first six months (1 fireman only at this rate); $1,530, first year; $1,590, third year; $1,650, sixth year.
[37] Salaries: $130, first year; $135, second year; $140 thereafter.
[38] Electricians, 8 hours per day.
[39] Auto engineer and lineman, 11 hours per day; superintendent of fire alarm, 10 per day.
[40] Chief engineer subject to call, 24 hours per day.
[41] Death Fund: Widow, $30 per month; children under 16, $10 per month.
[43] 1 superintendent of fire alarm at $2,550; 1 assistant superintendent of fire alarm at $2,025; 1 mechanic at $2,250; 1 mechanical engineer at $1,915; 3 fire alarm operators at $2,025.
[42] 1 master mechanic at $200; 2 mechanics at $145; 1 fire inspector at $135; 1 electrical inspector at $200.
[44] 1 superintendent of fire alarm at $265; 1 drill master at $250; 1 fire inspector at $250; 1 mechanic at $250; 1 assistant mechanic at $205; 4 fire alarm operators at $205.
[45] 1 mechanical supervisor at $2,500; 1 assistant mechanical supervisor at $2,350; 1 electrician at $2,500; 1 assistant electrician at $2,350.
[46] 2 electricians at $150; 1 fire inspector at $135; 1 mechanic at $135; 4 assistant engineers at $130; 6 chemical crew at $130; 6 salvage corps at $125; 3 telephone operators at $125.
[47] 1 superintendent of fire alarm at $175; 1 assistant superintendent of fire alarm at $155; 1 fire inspector at $155; 2 mechanics at $155.
[48] 1 master mechanic at $165; 1 electrician at $165; 1 assistant electrician at $160; 1 fire inspector at $150.
[49] 1 superintendent of fire alarm at $1,740; 10 drivers at $1,710; 2 tillermen at $1,710; 1 lineman at $1,710.

The Municipal Bond Market

By SANDERS SHANKS, JR., Editor, *The Bond Buyer.*

THE reduction of the Federal Reserve rediscount rate by the New York Reserve Bank on February 6 brought to an abrupt stop the downward movement of municipal bond prices which characterized the market during most of the month of January. Always sensitive to changes in the money situation, high-grade state and city bonds responded immediately to the improved outlook signalized by the rate reduction. Prices have recovered partially the losses of earlier weeks, but are still at a level under the high to which they had advanced at the beginning of the year.

The competition of new issues of high-grade corporation bonds, such as the recent $150,000,000 American Telephone & Telegraph Co. offering, has hurt the municipal market. Insurance companies and savings banks have been much attracted by such issues and have placed their funds in bonds of that type rather than in municipals offering substantially lower returns.

The bond market is gradually improving. It is undoubtedly true that money is not as easy as a 4 per cent rediscount rate suggests. High-grade bonds must eventually respond to falling money rates. If money continues to become easier, we will see municipals selling higher. However, there is no reason at this time to look for any early material change in the situation such as to warrant more than a gradual firming of bond prices.

The following table, giving the details of recent sales of new issues, indicates the current level of municipal bond issues:

Amount	Municipality	Rate (%)	Maturity	Net Basis (%)
$4,750,000	State of Massachusetts	4	12 2/3-yr. (avg.)	3.92
140,000	Attleboro, Mass.	4	8¾-yr. (avg.)	3.99
787,000	State of Maryland	4½	9½-yr. (avg.)	4.06
1,400,000	York Co., Pa.	4¼	10 1/3-17½-yr. (opt.-avg.)	4.20
310,000	Donora, Pa.	4½	23¾-yr. (avg.)	4.29
2,470,000	White Plains, N. Y.	4.35	18 2/3-yr. (avg.)	4.34
650,000	West Hartford (town), Conn.	4½	1-25-yr. (ser.)	4.36
28,000	Flatrock Tp., Ind., Sch. Dist.	4½	7¾-yr. (avg.)	4.44
100,000	Waukesha, Wis.	5	5 1/3-yr. (avg.)	4.50
1,000,000	Cuyahoga Co., Ohio	4¾	5 5/6-yr. (avg.)	4.59
3,500,000	Jersey City, N. J.	4.60	2 1/3-yr. (avg.)	4.59
50,000	Kirkwood, Mo.	4¾	1-20-yr. (ser.)	4.72
100,000	Goldsboro, N. C.	5	20 1/3-yr. (avg.)	4.99
1,200,000	Mobile Co., Ala.	4¾	18 5/6-yr. (avg.)	5.11

County Libraries Continue to Gain Favor

THE county library system is becoming increasingly popular throughout the country, reports the Committee on Library Extension of the American Library Association.

Since the October issue of *Library Extension News*, word has reached the association of the establishment of seven new county libraries in four states. In Somerset County, N. J., the vote on Election Day was seven to one in favor of such an institution. Ten of New Jersey's 21 counties now have county libraries, according to the Association.

Other county libraries reported since October are those in Coconino and Yuma counties, Ariz., located at Flagstaff and Yuma respectively; Jackson County, Mich., at Jackson; Somerset County, N. J., at Somerville; Deaf County, Jefferson County and McLennan County, all in Texas, at Hereford, Beaumont and Waco respectively.

In this same field of service, the Chattanooga Public Library is entering upon a more extensive program for all parts of the city and Hamilton County. An unusual county library branch is that established at the construction camp of the San Gabriel dam in California. The Los Angeles County Library system has established this branch in the camp recreation hall. Close to 3,000 workmen with families, will ultimately be employed on this project which may require five years to complete.

Endorsements of the county library plan have been expressed recently by Governor John Hammill of Iowa, Governor Harry G. Leslie of Indiana, former Governor Frank O. Lowden of Illinois, and Superintendent of Public Instruction R. P. Wisehart of Indiana. Former Governor Lowden believes that one of the best means of establishing county libraries is through a system of branches and service stations visited regularly by a book automobile or branch library on wheels.

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How Long *Should a* Culvert Last?

Above — GOHI Corrugated Culvert installed near Cookeville, Tenn., in 1909. Still practically perfect after 20 years of service.

GOHI Corrugated Culverts are made of pure Iron-Copper Alloy, which is definitely known to be the longest-lasting culvert metal on the market today.

Easily handled. Installed between sunup and sundown. No repairs. No upkeep.

AN engineer once remarked — "I use Culvert material that will last 2000 years."

We might well ask — Is there any such material? If there is, who can prove it?

If such material could be found — could it give 2000-year practical service?

It is a commonly known fact that, even in the comparatively short span of 15 years, the forces of erosion make tremendous changes where highways and fills have been constructed, frequently making necessary re-location of drains even in less than that short time.

All evidence points conclusively to a minimum life for GOHI Corrugated Culverts of many years in excess of the drainage demands which necessitated the original installation.

During such a period of service, GOHI Corrugated Culverts, through original low first cost, saving in investment, and freedom from upkeep, effect practical economies that far more than offset the value of any claims for longer service, or the highly improbable need for longer service.

GENUINE OPEN HEARTH IRON
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(Meet copper-bearing pure iron requirements in all accepted specifications for corrugated metal culverts.)

Corrugated Culverts

Give Lowest-cost-per-year Service

Specify them for their many practical advantages over the heavier, rigid type. Any of the GOHI Culvert Fabricators listed below can furnish technical service on any culvert installation.

GOHI CULVERT MANUFACTURERS, Inc., Newport, Ky.

Denver Steel & Iron Works Co. Denver, Colo.	**Lincoln Steel and Forge Co.** St. Louis, Mo.	**Roanoke Sales Corp.** Roanoke, Va.	**Tennison Brothers** Texarkana, Ark.
A. N. Eaton, Metal Products Omaha, Nebr.	**The Newport Culvert Co.** Newport, Ky.	**St. Paul Corrugating Co.** St. Paul, Minn.	**Capital City Culvert Co.** Madison, Wis.
Feenaughty Machinery Co. Portland, Oregon	**The Pennsylvania Culvert Co.** Philadelphia, Pa.	**Tennison Brothers** Oklahoma City, Okla.	**Central Culvert Co.** Ottumwa, Iowa

THE MONTH IN PUBLIC HEALTH

Conducted by JAMES A. TOBEY, Dr. P. H.

Progress in Social Hygiene

A BRIEF résumé of social hygiene activities for 1929, issued by the American Social Hygiene Association, of which Dr. William F. Snow is General Director, points out considerable progress in the educational, family relations, legal and protective, and medical measures which comprise the program against the venereal diseases and other sexual delinquencies. Copies of this interesting résumé may be obtained from the Association, at 370 Seventh Avenue, New York City.

In a recent report to Congress, Surgeon General H. S. Cumming, of the United States Public Health Service, stated that the control of the venereal diseases may still be regarded as one of the most important public health problems in this country. During 1929 for example, state health authorities reported 195,559 cases of syphilis and 156,544 of gonorrhea, though reliable estimates place the total number of new cases of the venereal diseases at more than a million a year. The American Social Hygiene Association, its 31 local affiliated societies, and other official and voluntary agencies working in this field, apparently still have much ardent effort ahead of them. In their activities they deserve the support of all municipal and civic authorities and groups.

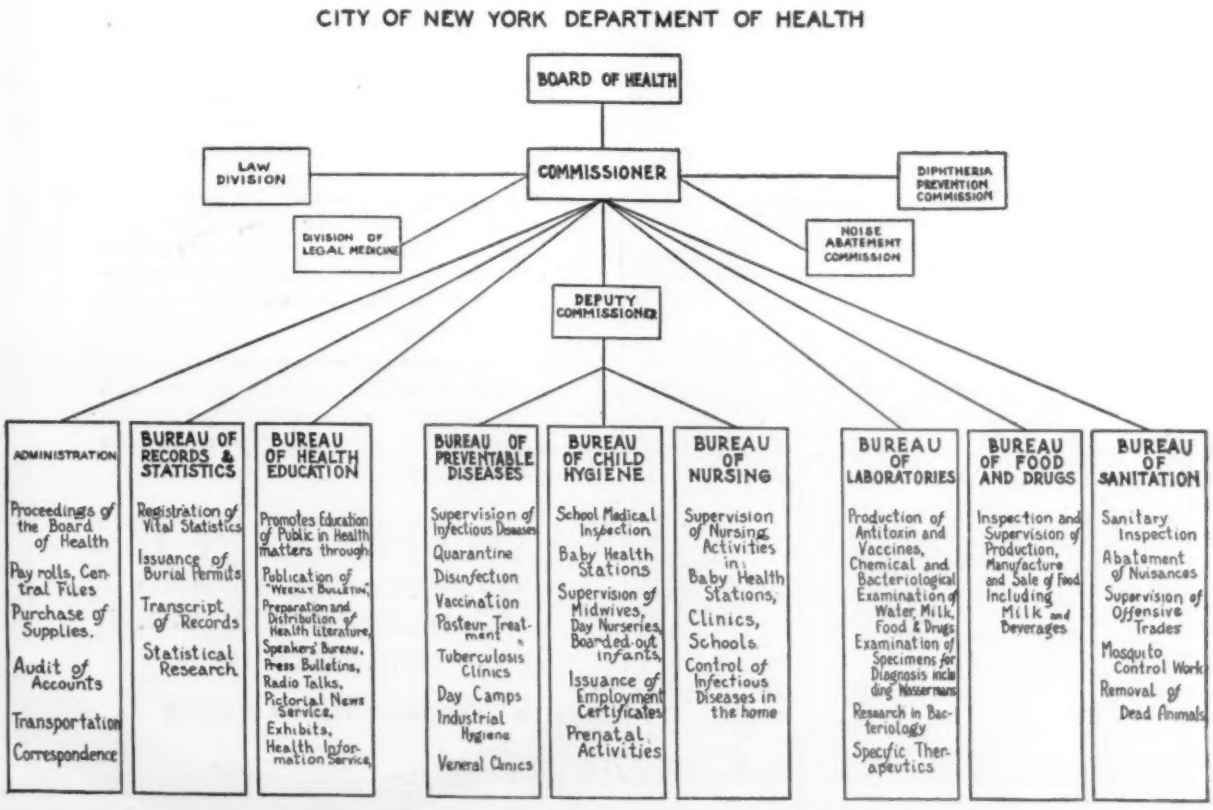
The Parrot Disease

A MEDICAL curiosity known as psittacosis, or parrot fever, appeared in the United States in December and by the end of January had caused at least a dozen deaths and about fifty authentic cases. The United States Public Health Service assigned one of its officers to study the disease, and the President imposed a quarantine on imported parrots.

Although psittacosis has been recognized for fifty years and several epidemics of it have occurred in various parts of the world, the malady is such a rare one that most physicians and health officers had never even heard of it. Opinions vary as to the exact cause of the disease, though there seems to be no doubt that it is spread to man from infected parrots. According to an item in the *Weekly Bulletin* of the New York City Health Department for January 11, 1930, the cause of parrot fever is a bacillus of the genus *Salmonella Lignieres*, first isolated in 1893, but an editorial in the *Journal* of the American Medical Association for January 18, 1930, states that while the disease is attributed to an organism called *Bacillus psittacosis*, there is doubt as to whether this is the true cause.

An epidemic of psittacosis developed in Paris in 1892 after a shipment of parrots had arrived from South America. During the voyage some 300 out of a total of 500 birds had died of a disease thought to be enteritis. About three weeks after the survivors had been distributed in Paris, an epidemic of psittacosis occurred among the people, resulting in 49 cases with 16 deaths. Other epidemics have been reported from time to time, including one in Pennsylvania in 1917 and another in Binghamton, N. Y., the same year.

In a radio talk on the disease, given on January 22 by Dr. Edward S. Godfrey of the New York State Department of Health, the chief advice given to parrot owners is not to handle sick birds, especially if they have been recently imported. There is of course no reason for widespread alarm about the situation. Already the disease has ceased to be news, and acounts of it have disappeared from prominent positions in the newspapers.



HOW THE METROPOLIS ORGANIZES ITS PUBLIC HEALTH ACTIVITIES

This organization chart is reprinted from the Weekly Bulletin of The New York City Health Department, Dec. 28, 1929

Be sure you're right- then go ahead

A SOUTHERN city asked our opinion on a rather elaborate airport project under contemplation. Much to their astonishment, we recommended, after careful study, a drastic curtailment of their present program. Our survey had shown that the proposed initial expenditure could be materially reduced, and at the same time ample provision made for future expansion.

If your city is planning an airport, let A.D.C. specialists make an expert survey of local conditions and a preliminary layout of your requirements. Our recommendations will be unbiased and founded upon wide experience.

Every airport project is a special problem in itself. A.D.C. engineers, executives and pilots coordinate their knowledge to produce just the right job required in each particular case.

AIRPORT
DEVELOPMENT AND
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What Disraeli Said

THE celebrated British prime minister, Disraeli, is often quoted as saying that public health is the first duty of the statesman, an axiom to which all thinking persons will subscribe. In the *Health Officers' News Letter* of the American Public Health Association for January 22, 1930, W. F. Walker, Dr. P. H., has given the exact quotation of the memorable statement of Disraeli in 1877, as follows:

"The health of the people is really the foundation upon which all their happiness and all their power as a state depend. It is quite possible for a kingdom to be inhabited by an able and active population; you may have successful manufactures and you may have a productive agriculture; the arts may flourish, architecture may cover your land with temples and palaces, you may have even material power to defend and support all these acquisitions; you may have arms of precision, fleets of fish torpedoes [sic], but if the population of the country is stationary or yearly diminishing—if, while it diminishes in number it diminishes also in stature, in strength, that country is doomed. The health of the people is, in my opinion, the first duty of a statesman."

A New County Health Department

PRESIDENT HOOVER, in his message to Congress last December, stressed the importance of county health work, and recommended that Federal funds for health purposes be utilized for building up county or other local health units. Such departments are now organized in nearly 500 counties in the United States, often with state, and some times with Federal, financial assistance. The apportionment of financial aid for county health work is, incidentally, discussed in *Public Health Reports* for January 3, 1930, by Elbridge Sibley and Dr. J. W. Mountin.

The southern states have been, in general, the most active in setting up county health organizations. In New York, for example, there are now only four such departments, despite the fact that permissive legislation for the creation of such health units has existed since 1921 and state authorities have urged their establishment. On January 7, 1930, the Board of Supervisors of Westchester County, which adjoins New York City, voted to establish a county health department and a few days later the State Health Commissioner, Dr. Matthias Nicoll, Jr., resigned from the state service in order to become the first county health officer.

In a statement given out when he accepted this position, which, to the credit of Westchester, pays $12,000 a year, the same as the state health commissionership, Dr. Nicoll made the significant assertion: "The future development and success of public health work, in my judgment, depends very greatly on decentralization and the placing of responsibility, in so far as possible, for the administration of local public health not on a central, state organization or on small, generally ineffective village and town units, but on the county itself, with only such supervision by the state as may be necessary to meet unusual situations."

An International Congress on Mental Health

INTERNATIONAL congresses have been held on all other kinds of hygiene, but mental hygiene has never been so favored. The first international congress on this important subject will be held in Washington, D. C., from May 5 to 10, 1930, with the Hon. Herbert Hoover as Honorary President and Dr. William A. White as President in fact. Delegates from all over the world will attend this convention, in which the whole field of mental hygiene will be surveyed and discussed. Further information about it may be obtained from John R. Shillady, at 370 Seventh Avenue, New York City.

Illinois Establishes a Record

"ILLINOIS," says the *Health Messenger* of that state for January 15, 1930, "has just established what seems to be an undisputed record among the states of the Union." This bulletin then goes on to explain that the record, far from being a source of pride, is a disgrace, for the state had more cases of smallpox than any other state and more than most foreign countries. In 1929 there were 4,300 cases of smallpox reported in Illinois. By contrast, it is stated that Japan had only 110 cases in the first nine months of 1929 and Germany had only one.

"It is probably a matter more of neglect than definite opposition to vaccination which gives Illinois her ill-cherished smallpox record," concludes the *Messenger*. In the *New England Journal of Medicine* for January 16, 1930, Dr. Samuel B. Woodward presents a cogent argument in favor of vaccination by giving statistics which show that there were more than half a million cases of smallpox in the United States from 1919 to 1928, this country being the most smallpox-ridden nation of the world, with the possible exception of China, India, and perhaps Russia. The author quotes the health officer of St. Louis, Dr. Starkloff, as saying that it costs the city $150 to care for each case of smallpox, but only 4 cents to prevent it by means of vaccination.

A Whale of a Difference

A STRIKING pamphlet entitled "What a Whale of a Difference a Little Health Makes, Especially in Child Health," has been issued by the Cleveland Health Council, of which Dr. Richard A. Bolt, is Director. This four-page folder, the cover of which is adorned with a couple of spouting whales, outlines the important problem of the health of the pre-school child in Cleveland and suggests systematic health examinations, correction of defects, community education, wholesome recreation, a safety program, and wider opportunities for the observation and guidance of pre-school children as aids to the solution of the problem. This is the kind of attractive literature that can perform a real service in presenting health problems and opportunities to the public.

In the New Jersey *Public Health News* for December, 1929, which is edited by Cecil K. Blanchard, there is an interesting editorial on health board publicity, in which it is stated that two means of informing the public, by newspaper publicity, and by annual reports, are open to practically every health board, no matter how meager its funds may be. This issue also contains Professor I. V. Hiscock's article on the purposes, contents, and preparation of health reports, a valuable paper which was abstracted in this department several months ago.

Radio Talks on Municipal Government in New York State Continued

THE series of talks on various phases of city and village governmental activities, broadcast during the last four months of 1929 from station WGY, Schenectady, N. Y., the subjects and speakers for which were given in THE AMERICAN CITY for September at page 159, was so successful that another series has been instituted. These are given on Saturdays, from 7:45 to 8:00 p.m.; they began on January 11, and the last day is June 7, seventeen talks being scheduled for this 21-week period.

The talks are given under the auspices of the Schenectady Bureau of Municipal Research, assisted by the New York State Conference of Mayors and other Municipal Officials. Those scheduled for March and later are as follows:

March 1, "Governing the World's Biggest City (New York)" Walter B. Caughlan, Assistant Corporation Counsel, New York City.

March 8, "Insuring City Property," Norman A. Boyd, Mayor, Binghamton.

March 22, "Village Government in New York State," Howard G. Wilson, Mayor, Lynbrook.

March 29, "Cleaning a City's Streets," Lester W. Herzog, President, Common Council, Albany.

April 5, "Building and Housing Code," George Gove, Secretary, Division of Architecture, State Housing Board, 949 Broadway, New York.

April 12, "Town Government in New York State," Frank C. Moore, Village Attorney, Kenmore; also Counsel to Legislative Commission revising the Town Law.

April 26, "A Police Training Demonstration," Captain-Inspector Albert B. Moore, Director, State Police School, Troy.

May 3, "Modern City Lighting."

May 10, "Municipal Markets and Food Distribution," H. D. Phillips, Director, Bureau of Markets, State Department of Agriculture and Markets.

May 17, "Collection and Disposal of City Wastes," John V. Lewis, Sanitary Engineer, in charge of refuse disposal, Department of Public Works, Rochester.

May 31, "The Traffic Problem." A. Graham Cole, Metropolitan Life Insurance Co.

June 7, "Substituting Facts for Guesses in Solving City Problems," William P. Capes, Executive Secretary, New York State Conference of Mayors.

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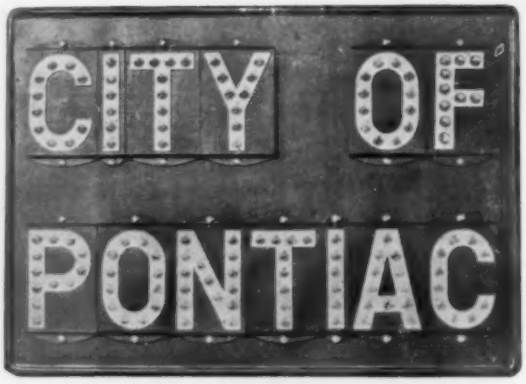

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Author of "The Law of City Planning and Zoning"

ZONING and PLANNING NOTES

From Data collected by the Zoning Committee of New York (233 Broadway)

Recent Zoning Ordinances

SAN FERNDANDO, CALIF.—September 30, 1929.
GREELEY, COLO.—December 24, 1929.
JACKSON, MICH.—December 23, 1929.
MAPLEWOOD, MO.—January 15, 1930.
SPRINGFIELD, MO.—January 14, 1930.
NEWARK, N. J.—January 8, 1930.
RIDLEY PARK (BOROUGH), PA.—October 29, 1929.

Eminent Domain

CALIFORNIA.—*City of Los Angeles* v. *Oliver*, 283 Pac. 298.—The fixing of some particular date as to which value in eminent domain shall be ascertained is a matter of procedure. Procedure by which the amount of compensation to the owner of property taken shall be determined is not a portion of a right guaranteed by the constitution of California, and therefore is not vested in the property owner.

The Legislature may change rules of procedure or remedies and such changes may be made applicable to pending actions, provided that under the guise of a mere change of procedure or substitution of remedy, vested rights are not destroyed or obligations of contract impaired, and so long as a reasonably efficient remedy remains.

Parking

NEW YORK.—*People* v. *Sullivan*, 238 N. Y. 253.—The permanent designation of an avenue in the city of Binghamton as a no-parking street is a legislative act requiring a direct grant of power to the local authorities exercising it. The Legislature could have given this power to the commissioner of public safety (*Wilcox* v. *McClellan*, 185 N. Y. 9, 77 N.E. 986) but chose to give it to the common council (Second Class Cities Law, Art. 4, Sec. 30). The commissioner has this power only in cases of emergency.

Consent Zoning

ILLINOIS.—*Spies* v. *Board of Appeals*, 168 N. E. 220.—The provision of a zoning ordinance that a community store may be established within a residential zone only upon the written consent of owners of 75 per cent of all the property within a radius of 300 feet of the proposed store is unconstitutional in that it subjects an owner in the use of his property to the arbitrary, uncontrolled will of neighboring property owners.

EDITOR'S NOTE.—The Court, as one of the reasons for this decision, says: "It cannot be contended that there is anything dangerous to the public health or safety or detrimental to the public morals or the general welfare in the conduct of a community store." This is tantamount to saying that the exclusion of business from a residential district is not authorized by the police power, which would be destructive of all zoning and is no doubt much beyond the intention of the judges. In a residence district, as is now universally affirmed wherever zoning is supported, business *is* detrimental to the general welfare.

The Court cites, as a controlling authority in its decision, the case of *State of Washington* v. *Roberge*, 278 U. S. 356. In so far as that case holds that consent zoning like that in the Spies case is unreasonable, it is an authority for that case; for in principle the zoning in the two cases in this respect is identical. In the Roberge case, however, it was a philanthropic home which was excluded from a residential district; and it may well be contended that an ordinance, in whatever form, which bars such a use from these districts is unreasonable, while no such claim with regard to the exclusion of a store could be maintained.

An article on this case will be found in the *National Real Estate Journal* for February 3, 1930.

Reasonableness

MICHIGAN.—*City of North Muskegon* v. *Miller*, 227 N. W. 743.—A zoning ordinance restricting the use of property to single-family dwellings, churches, schools and libraries, farming and truck gardening and private clubs is unreasonable as respects marshy lowlands situated adjacent to dumping ground used by the city for garbage and refuse and unfit for the purposes to which they were limited by the zoning ordinance.

EDITOR'S NOTE: The suit was brought to restrain defendant from, drilling for oil on his property situated in the district in question. The reader will remember other cases given in these Notes with regard to the right to use land for the extraction of oil, etc. On this point is also the case of *Terrace Park* v. *Errett*, 12 Fed. (2d) 240.

Navigable Waters

MICHIGAN.—*Putnam* v. *Kinney*, 227 N. W. 741.—That an inland lake is boatable for row boats commonly used for fishing does not determine its navigability, which depends upon whether waters are capable of being used by the public as thoroughfares or highways for purposes of commerce or travel.

WISCONSIN.—*Nekoosa Edwards Paper Co.* v. *Railroad Commission*, 228 N. W. 144.—Boating for pleasure is considered navigation as well as boating for pecuniary profit.

EDITOR'S NOTE: While it is quite true that not every pond upon which a boat can be launched is navigable water, the weight of decision supports the proposition that passage for pleasure is navigation.

Boards of Appeals—Reasonableness

NEW JERSEY.—*Crystal Holding Co.* v. *Town of Westfield*, 147 Atl. 916.—Certiorari from determination of board of adjustment refusing to allow a permit for an apartment house in a district where apartments were forbidden. In supporting the board in its refusal the Court says:

"We think that the record before us will not justify us in disturbing the determination of the board of adjustment. Prospect Street at the point in question is but 29 feet wide between the curbs. Nearby is a school, where congestion has resulted in accidents. In short, we think, it appears that there was evidence before the board to justify the finding of the board that the erection of an apartment house 'would tend to further congest traffic at an already dangerous spot, and would greatly add to the peril of school children who were obliged to pass that way.'" (Other cases in accord cited.)

NEW YORK.—*Richardson* v. *Knapp*, 237 N. Y., 589.—The refusal of the zoning commission of the town of Greece, Monroe County, to issue a permit for a service and gas station in a business use district on the grounds that it is an industry not permitted in a business district, that property owners in the immediate vicinity objected on the ground that it would depreciate their property, that the locality was amply provided with gas stations, and that the station would be within 200 feet of a public school, and in the opinion of the commission would increase traffic dangers in the use of the highway by the children, was justified. There would seem to be no abuse of discretion on the part of the commission.

Excess Condemnation

NEW YORK.—*In re Monroe Avenue in the City of Rochester*, 237 N. Y. S. 147.—The power of excess condemnation does not extend to the taking of additional land after the proceeding to acquire the property for the principal improvement is finished and that land acquired. The surplus land can be taken only in connection with the taking needed for the principal improvement.

Discrimination

NORTH CAROLINA.—*Burden* v. *Town of Ahoskie*, 150 S. E. 808.—A city ordinance prohibiting the future erection of a gasoline filling station within 300 feet of a graded school is invalid, as discriminating in favor of filling stations already in operation within the prohibited area.

EDITOR'S NOTE: The ordinance in question was not part of a zoning ordinance; apparently the town was not zoned.

Collateral Attack

NORTH CAROLINA.—*State* v. *Robertson*, 150 S. E. 674.—Where one charged with violating a zoning ordinance by erecting a store and automobile service station in a residence zone fails to bring certiorari to review the order of the board of adjustment sustaining the building inspector's refusal of a building permit, he is precluded from collaterally attacking the ordinance as unreasonable and unconstitutional and evidence of distance of other stores and filling stations was properly excluded.

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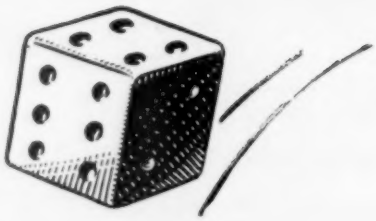

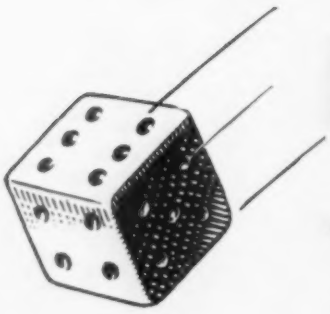

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Apartments Excluded from Single-Family District

OHIO.—*Koch* v. *City of Toledo*, Circuit Court of Appeals of U. S., Sixth District. —An ordinance of the city of Toledo excluding apartments from a district reserved for churches, schools and private residences is valid.

Interim Zoning

An article on the case of *McCurley* v. *City of El Reno*, 280 Pac. 467, digested in these Notes for December, 1929, appears in the January, 1930, issue of the *Oklahoma Municipal Review*.

Zoning Progress

Under this title, Joseph P. Chamberlain has written for the American Bar Association *Journal* of September, 1929, an excellent review, from the legal standpoint, of the progress of zoning in the United States during the last few years.

Zoning in Boston

The fourteenth Annual Report of the City Planning Board of Boston, for the year 1928, gives on page 3 an account of zoning legislation affecting Boston during that year.

City Planning Commissions

The Department of Commerce of the United States, under date of December, 1929, has issued a "Tabulation of City Planning Commissions in the United States." It appears that in at least 691 municipalities there are official planning commissions and in 41 municipalities committees of chambers of commerce and other unofficial boards having the same end in view. (See page 99 of this issue.)

The Non-Partizan: What He Believes

To the Editor of THE AMERICAN CITY:

In the January issue of THE AMERICAN CITY was an article by Gilbert Bettman, Attorney-General of Ohio, headed "Party Organization Declared Essential to Efficient Government." I have played a part in Cincinnati and elsewhere in bringing about the condition against which Mr. Bettman inveighs, and therefore modestly think that I can bring some light on this movement for "non-partizanism."

It is unfortunate that many writers and speakers do not carefully consider their terms when naming a new social or political phenomenon. Besides, they may give to a word which starts with a certain meaning the very opposite meaning later on. Huxley invented the word "agnostic" to describe with precision his religious views, but the public uses it as an equivalent for free-thinker and atheist. Something of that trouble surrounds the word "non-partizan" as popularly applied to a certain type of political thought and action. Mr. Bettman presumes that this thought and action can be comprehended by a literal translation of the Latin roots of the word—that is, one who advocates the abolition of parties. But that is exactly what a non-partizan is not. Because of this antagonism between the label and the thing, personally I use the label sparingly and then with some explanation. It would be splendid if the word could be dropped and the dead languages searched for a label not so misleading.

The Non-Partizan Smiles

What is a non-partizan? It is one who believes it desirable that a group of like-minded voters should have an equal chance with other such groups, especially in the conduct of elections, to attract votes and have those votes produce their due effect upon a given political unit, *regardless of the age or previous history of any of the groups*. From this it follows that a group of citizens who believe in a protective tariff should be given every facility to organize in order to persuade enough voters necessary to insure the election of members of the government charged with policy determination; but the election laws should be such as to give no vested right of any kind to such group or groups that form before any election, for otherwise an anti-tariff group might capture the vested interest of the tariff group, with resulting confusion. Similarly, he believes that if a citizen, pro-tariff in national affairs, is pro-municipal-ownership in city affairs, he should have the same facility for effective appeal on this clear issue, and the same protection from confusion which election laws produce that give vested interests to certain groups. But the non-partizan can only smile when Mr. Bettman says: "If the travail of building up and keeping up an organization has been gone through, why not use the agency created for all purposes?"

Why?

The reason for the smile is simple. The laws of probability prevent a group which is united in wanting a tariff from being united in wanting, say, the purchase of a private water company by the municipality. Since likemindedness concerning something that a government can do or affect is, in the opinion of a non-partizan, the basis of a *real* party, he believes it to be best to give the citizen perfect freedom to group and be effective in local affairs and not to make his views on national affairs hamper him in so doing. If Mr. Bettman conceives a party as "an agency for all [political] purposes," then the vitality of politics must utterly depart from such "parties." It is the view of the non-partizan that by adoption of such a philosophy the live centers of political purpose have passed from the national parties and are to be found in the recent political phenomenon, the "pressure groups," which use parties as an individual uses an automobile, something that goes anywhere he guides it so long as he keeps gasoline in the tank.

The Attorney-General of Ohio fears that if we had complete and effective freedom in both national and local spheres, the organization of national parties would suffer. The non-partizan believes the reverse; in fact, he is quite sure that the result of applying his belief must be a healthy reality in both national and local parties and politics.

Now it falls out that one of the best mechanisms for achieving this freedom for the voter and therefore health for the parties, is what is known as the "non-partizan ballot"—that is, a ballot without labels, party designations, or preferred positions. It is because of the form of this ballot that the appellation "non-partizans" has been illogically applied to its advocates. Thus has Mr. Bettman been innocently misled into thinking that non-partizan ballots are intended to secure the abolition of parties, when actually—granting the definition given of a party—the object has been the reverse.

No Politics

But both the partizan and the non-partizan know that political organization costs time and money. The partizan, however, believes that the time spent must be mostly spent by public employees, and that the money, much of it, must come from those who directly benefit from public expenditure. The non-partizan believes this to be neither necessary nor helpful to real political parties—and his belief is now buttressed by the existence of such bodies as the City Charter Committee of Cincinnati and the Progressive Government League of Cleveland. The City Charter Committee is financed by laymen and is officered by them; no public officer can sit in its councils or contribute to its funds, and its membership is not a recruiting ground for city employment.

When and where the partizan method is followed, non-partizans believe that finally the only principle that really supplies the cohesion and likemindedness of the group has been best expressed by one of Mr. Bettman's confreres. A bill was introduced in the Ohio Legislature to take from under civil service certain attachés of the Municipal Court of Cincinnati. When asked his reason for wanting the bill passed, the reply of the legislator was: "We want the jobs."

So long as partizans remain silent on this matter, we cannot consider our insistence on no politics in administration or courts as puerile. For non-partizanship means fair play for all real parties by means of a non-partizan election system and it also means no party consideration in the appointment of public servants outside the sphere of policy determination.

WALTER J. MILLARD.
Field Secretary, Proportional Representation League.

Philadelphia, February 10, 1930.

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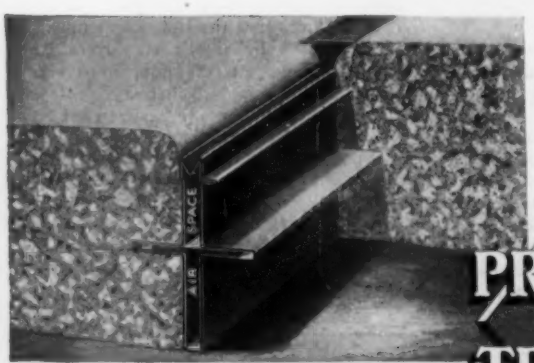

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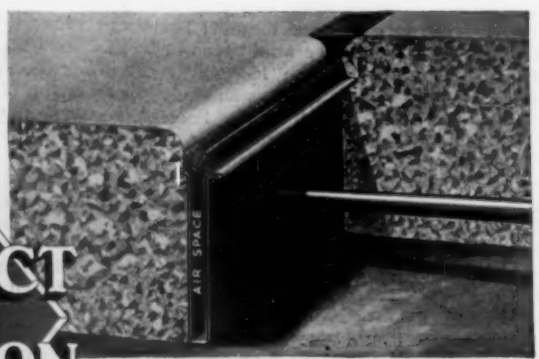

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THE CITY'S LEGAL RIGHTS AND DUTIES

Conducted by A. L. H. STREET, Attorney at Law

A Park Several Miles from a Large City's Limits Held to Be "Near" the City.—The Tennessee Legislature authorized the city of Nashville to acquire park lands within or near the city. The city acquired a large tract lying from five to eight miles from the city limits and sought to condemn adjacent lands. The condemnation proceeding was resisted on the ground that the city had no authority to acquire a park so far distant from its boundaries. But the action of the city was upheld by the Supreme Court of the state in the case of City of Nashville vs. Vaughn, 14 S. W. 2d. 716:

"It would seem that the broad language of the act shows an intention to vest the power in the Board of Commissioners to exercise wide and full discretion, subject to court review only when clearly and manifestly abused. . . .

"The term 'near' is, of course, relative. . . . It must be assumed that the Legislature had in mind existing modern conditions, and realized that 'near' today is a wholly different thing from 'near' in days gone by, made so by the wholly different facilities for transportation and movement generally; by the fact that trolley cars and automobiles have succeeded horse-drawn conveyances; . . . also, of the well-nigh universal tendency of municipalities to extend their park systems to distances removed from congestion, seeking rural conditions of air and space conducive to health and recreation. . . .

"We think it clear that a large park located no farther from the technical corporate limits of a large and populous city like Nashville, . . . with suburban surroundings extending miles out, . . . must be said to be near the city."

City Held Not Liable for Theft of Car from Municipal Parking Place.—The following shows the grounds on which the County Court of Allegheny County decided in the case of Kappel vs. City of Pittsburgh, 21 Pa. Munic. Law Rep. 18, that the city was not liable for loss by theft of a car parked in a municipal parking space on a wharf:

"We have neither found nor have been referred to any Act of Assembly authorizing the city to operate and maintain an automobile parking station for revenue so as to bring the act complained of in this case within the class of cases where a municipality is liable for the negligent conduct of its employees, such as where it transacts business as a vendor of water; manufactures and sells gas; or maintains an electric bureau and sells electricity. . . .

"The mere fact that the city maintained a parking station without state legislative authority would not in itself be sufficient to make it liable."

As to a contention that the city was liable because it charged ten cents for parking, the opinion adds:

"We might agree with counsel if there were state legislative authority authorizing the city to make such charge, but in the absence of such authority we conclude that said parking station was operated by the city under its police power. There may be some question as to the authority of the city to make any charge whatsoever; however, the nominal charge made, which possibly was done to keep the wharf clean and in fit condition to receive the automobiles, would not under the circumstances make the city liable for the negligence of its officers in charge thereof."

Indexes to Legal Decisions

The items appearing in this Department each month are classified by subjects in THE MUNICIPAL INDEX. The 1928 edition of the INDEX, on pages 110 to 115, covers the legal items published during 1924 to 1927 inclusive; and pages 94 to 97 of the 1929 INDEX list the items for 1929. The 1929 items will be similarly indexed in the 1930 MUNICIPAL INDEX, now in preparation.

Municipal Property Held Not Subject to Special Assessment in the Absence of Express Statutory Provision.—The liability of land acquired by a city for public purposes to continued assessment for a special improvement constructed under county authority was considered by the California Supreme Court in the case of City of Inglewood vs. Los Angeles County, 280 Pac. 360.

The Court held that a constitutional exemption of municipal property from "taxation" did not exempt from special assessments. But the Court decided that there is an implied exemption, and that, in the absence of positive legislative authority, special assessment of municipally owned property is improper.

The narrower question involved in this case was whether or not the implied exemption from assessment in this case extended to property acquired by the city after the improvement districts were created. The Court ruled that the city's acquisition of the property withdrew the same from further assessment, and that this result was not unconstitutional as violating the rights of other property owners in the districts, by tending to increase their liability for the improvements, nor as violating the rights of the holders of special assessment bonds, by diminishing the security for the payment of the bonds.

Railroad's Contract to Serve City Held Not Governed by Commerce Acts.—A railroad company contracted to transport New Orleans' garbage to a dump at $3 per car. No duration of the contract was specified, but the service was continued for more than ten years without bills being rendered by the railroad company at a higher rate, although the Railroad Administration authorized an increase in general rates. Later, transportation rates were increased under order of the state authorities, and the company billed the city at these higher rates. The city paid on the contract basis and successfully resisted suit for the excess claimed by the railroad.

In the case of New Orleans & North Eastern Railroad Co. vs. City of New Orleans, 123 So. 323, the Louisiana Supreme Court held that, despite the Interstate Commerce Act and other rate-regulating provisions, "public carriers may serve the state or city, parish or town government, free of cost or at reduced rates."

It was further held that this agreement was not subject to the tariffs of the Louisiana Public Service Commission, and that as the railroad company never gave notice of abrogation of the contract [which, inferentially, might have been given because the contract was for an indefinite period] the agreed rate, $3, was all that was recoverable by the company. And, the city having paid in full on that basis, the company's suit was ordered dismissed.

Municipal Sewer Project Was Vitiated by Ineligibility of Commissioners.—The right of taxpayers to enjoin a proposed sewer improvement on the ground that some of the commissioners of the sewer district were not taxpayers of the district was declared by the New York Supreme Court of Erie County in the case of Sheehy vs. Town of Hamburg, 236 N. Y. Supp. 166. The Court said:

"The Legislature evidently intended that the men charged with the responsibility in matters of such importance should be taxpayers in the district affected thereby, and thus share the burdens imposed by their own acts. . . . In analogous situations, such as the appointment of appraisers in condemnation proceedings, the courts have always insisted that the requirements of the statute be complied with, especially when the objection was timely. . . . The reason for strict compliance with the statute is the same in both cases; in the present case to have a commission interested in the construction of the sewer at a proper cost, and in condemnation proceedings to see that the property holders get a fair compensation for the property taken."

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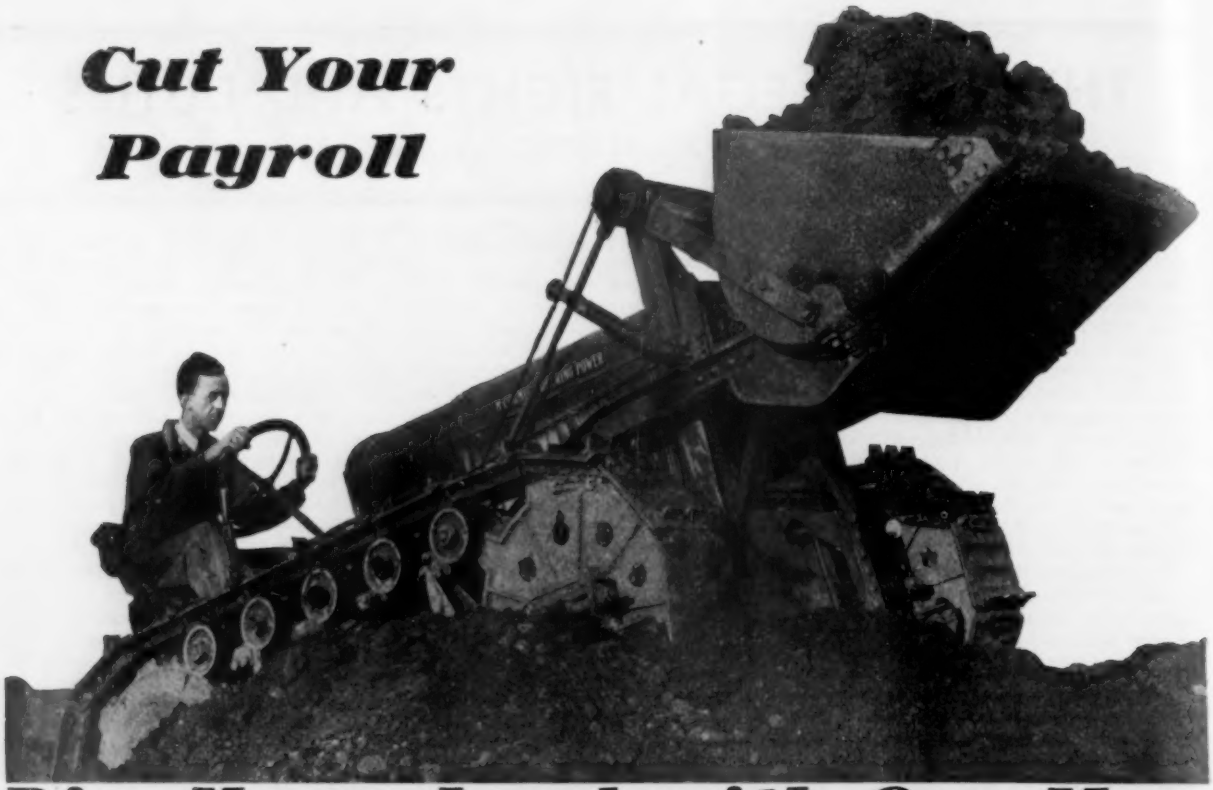

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Fire Marshal's Right to Order Demolition of Buildings Defined.—Referring to a Louisiana statute conferring powers upon the state fire marshal, and to its previous opinion concerning the effect of this law, the Louisiana Supreme Court said in the recent case of Simms vs. Liuzza, 123 So. 301:

"The fire marshal, therefore, was vested with the power under the law to inspect the building in question for the purpose of determining its condition with respect to its liability to fire, and, if he found such to be the fact, to order the owner to demolish the structure. We do not mean to say that Liuzza, as the owner of the building, could not have appealed to the courts to revise the order of the fire marshal, if arbitrarary or unjust."

City Held Not Liable for Negligence in Operating Swimming Pool in Park.—The substance of the principal points decided by the Georgia Court of Appeals in the case of Petty vs. City of Atlanta, 148 S. E. 747, is as follows:

A city operating a swimming pool in a park, to promote the pleasure and health of the public at large, is not liable in damages for negligent condition of an adjunct of the pool, although a profit may result to the city in operating the place.

The city would have no right to operate a swimming pool mainly as a source of revenue, in the absence of charter or statutory authority to do so. And if the city authorities should undertake to do so, it would be so far in excess of municipal power as to avoid liability on the part of the municipality for the unauthorized maintenance of the pool.

County Officials Held Not Liable for Injuries Resulting from Fault of a Subordinate.—In the construction of a road by employees of a Board of County Commissioners, one of them was fatally injured in a cave-in of earth, and his widow sued the County Commissioners personally, as well as officially. Negligence of the foreman in charge of the work, in directing decedent to enter an excavation, was the principal basis of the action.

There being no showing that the foreman was generally incompetent, and no proof that the Commissioners were personally present and participated in the work, the Oklahoma Supreme Court decided (Berg vs. Willibey, 280 Pac. 456) that there was no liability. In passing, the Court said:

"Any acts done in connection with laying out the public road would be an act calling for the exercise of judgment and discretion, for which, in the absence of malice or corruption or a statutory provision, defendants would not be liable."

City About to Extend Its Electric Plant Held Not Subject to Prohibition.—The right of the Utah Supreme Court to issue an original writ to prohibit a city from exceeding its powers was recognized by that Court in the case of Barnes vs. Lehi City, 279 Pac. 878. But it was held that there was no attempt to exceed municipal powers in this case, and the writ was denied.

On the principal points involved in the case, the Court decided.

Defendant city was not bound to secure a certificate of convenience and necessity from the Public Utilities Commission before contracting to enlarge its power-plant, so as to be able to furnish electrical energy to its inhabitants.

A constitutional limitation of the city's indebtedness to 4 per cent of the value of taxable property, excepting as greater indebtedness might be authorized by electoral vote, does not apply to the acquisition of public utility property to be paid for out of the revenues of the utility.

Sale of Gasoline to Township by Firm of Which a Commissioner Was a Member Held Illegal.—A copartnership of which a township commissioner was a member was disqualified to sell gasoline to the township, held the Allegheny County Court of Common Pleas in the case of Commonwealth vs. Sheck, 21 Pa. Munic. Law Rep. 9. The decision rests upon a Pennsylvania statute that prohibits any member of any corporation or public institution, or any officer or agent thereof, to be in any wise interested in any contract for the sale or furnishing of any supplies or materials to or for the use of the corporation, municipality or institution of which such person shall be a member or officer.

Discipline of a Police Officer Will Not Be Disturbed by the Courts If There Is Evidence Tending to Support It.—In affirming action of the Board of Commissioners of defendant city in disciplining a lieutenant of police, the Kentucky Court of Appeals said in Williams vs. City of Newport, 18 S. W. 2d, 283:

"The General Assembly has wisely placed the regulation of the police force in cities in the hands of the local authorities selected by the people. The officers whose duty it is to enforce the laws, rules, and regulations may not act arbitrarily, but the Court should not unduly interfere with their duties in inflicting penalties on the members of the force. As long as the evidence is reasonably sufficient to uphold the action of the Board of Commissioners, their action should not be disturbed by the courts."

City Held Liable for Negligent Operation of Water-Works Truck.—A municipality, in maintaining and operating a system of water-works whereby it furnishes water to its residents for domestic and commercial purposes, is engaged in a private, non-governmental business, and is liable to one injured by the negligence of an employee acting within the scope of his employment in connection with such business; and this is true notwithstanding the charter of the city directs that the price of the water so furnished shall be fixed as nearly as possible at "the cost of said water to the city."

The Georgia Court of Appeals reached the above stated conclusion in the case of City of Rome vs. Justice, 149 S. E. 88, an action for damages for injury to a traveler in a road due to negligent driving of a truck operated in connection with the city's water-works system.

Public Corporation Held to Be Estopped from Repudiating Contract of Purchase Made by Authorized Agent.—A Louisiana sheriff bought 120 gallons of disinfectant to be used in the courthouse and jail, but the parish (county) administrative board refused to pay the bill presented by the seller. Similar purchases had been made and the board had paid the bills, but in the meantime the board had adopted a resolution (without the knowledge of the sheriff or of the disinfectant manufacturer) requiring the approval of the board in the making of such purchases.

Upholding the right of the manufacturer to recover on the bill, the Louisiana Court of Appeal said in the case of American Disinfecting Co. vs. Police Jury of Grant Parish, 120 So. 135:

"Under such conditions, the police jury cannot escape the payment of the bill in question on the technical ground that the sheriff had no authority to bind the parish. It had constituted the sheriff its agent for making purchases of such necessary supplies by sanctioning and ratifying his conduct in that respect. It would be wholly unfair and inequitable to permit the parish to repudiate this debt on the technical ground that the sheriff had no authority to make the purchase, and, as a matter of law, it cannot do so. It is equitably estopped from denying the agency.

"'The doctrine of estoppel involves apparent or ostensible agency, which exists where the principal intentionally, or by want of ordinary care, induces third persons to believe another to be his agent, although he did not in fact employ him.' 31 Cyc. 1236. . . .

"This estoppel applies to parochial and municipal corporations, as well as to private individuals, where the acts of the agent are not ultra vires [beyond] the powers and duties of such corporations."

Borough Councilmen Surcharged with Amounts Expended for Equipment without Proper Bidding, for Payments to Themselves, and for Allowing Improper Salary, Etc.—Under a Pennsylvania statute permitting surcharge against borough officers of amounts illegally expended by them, the Court of Common Pleas for York County lately upheld the liability of Borough Councilmen who advertised for bids for a 350-gallon fire engine pumper and awarded a contract on a bid for a 500-gallon pumper, without readvertisement for bids. Liability was also imposed for buying more than $500 worth of hose without calling for bids, and for payments to members of the Council for services rendered by themselves to the borough, and for salary paid to the Chief Burgess without the same having been fixed by ordinance, as required by the Borough Code. A Councilman who was chosen as borough treasurer, in violation of statute, was held liable for compensation paid to himself. But, since there was no proof that the Council had authorized the payments, the other members of the Council were not held liable on the last-mentioned item. (Audit of the Borough of Manchester, 21 Pa. Munic. Law Rep. 2.)

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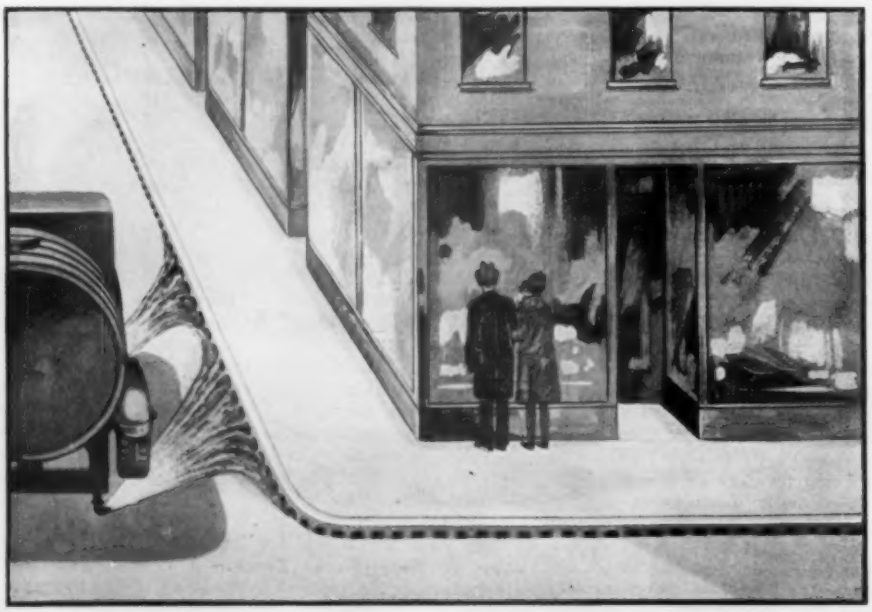

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Result of Referendum Held Not Vitiated by Smallness of Vote.—The mere fact that but a small percentage of the qualified electors of the city of San Antonio voted on a question of issuing $1,250,000 bonds for a sewage disposal sysdid not defeat the affirmative vote favoring the proposal, decided the Texas Court of Civil Appeals in the case of Lamm vs. Chambers, 18 S. W. 2d 212. The people who did not vote must be deemed to have known of the necessity for the system and to have intended to clothe the mayor and city commissioners with authority to build the system.

Part of Railway Right-of-Way Held Exempt from Paving Assessment.—A railroad company's right-of-way ten feet in width, used as the roadbed for a switch track, was not assessable by the city of Scranton for a paving improvement, if such right-of-way was necessary to the railroad as such, and without which it would not be a complete railroad, held the Court of Common Pleas for Lackawanna County in the case of Grading, Curbing and Paving Popular Street, 21 Pa. Munic. Law Rep. 32.

Public Property Is Not Subject to Mechanics' Liens in the Absence of Statutory Provision.—"Public property may not be subjected to a mechanic's lien, except upon specific statutory authority," declared the South Carolina Supreme Court in the case of Atlantic Coast Lumber Corporation vs. Morrison, 149 S. E. 243.

Judgment Confessed by City's Attorneys Held Binding upon the Municipality. — Assessments were levied against abutting property for benefits conferred by the laying of a water-main, but proved to be void because of defective procedure. The assessment certificates issued to the contractors therefore remained unpaid and they sued the city to recover the fair value of the work done. While trial of the suit was pending, attorneys for the city, after conferring with the Mayor and other city officials, consented with attorneys for the contractors that judgment be entered against the city for the amount of their claim without interest.

Later, however, the city appealed from the judgment. This appeal was dismissed by the South Dakota Supreme Court in the case of Coolsaet vs. City of Veblen, 226 N. W. 726. The following is the substance of the points decided by that Court:

In a proper case, a municipal corporation may be bound by its consent that judgment be entered against it, the same as any other litigant may bind himself. But where a city could not lawfully contract to pay a certain claim, it cannot bind itself by consenting that judgment on the claim be awarded against it.

Since the assessment certificates issued to the contractors in this case were invalidated through failure of the municipal officers to make proper certificate to the county auditor, the claim of the contractors against the city for the fair value of the work done was so far plausible as to support the city's consent that judgment for that amount be awarded against it.

Street Spaces May Not Be Vacated for Private Benefit to Injury of Nearby Property Owners.—In the case of Young vs. Nichols, 278 Pac. 159, the Washington Supreme Court affirmed a judgment requiring an abutting property owner to remove a building from a portion of a street which the city of Tacoma had purported to vacate for his benefit. The Court said:

"The power of a city, in this state at least, to vacate such of its streets or parts of streets as it chooses, is unquestioned. To illustrate, it may change a street from its use as a highway to a use for another public purpose when it is determined that the change will better serve the public good; it may vacate a street when it is no longer required for public use; or when its use as a street is of such little public benefit as not to justify the cost of maintaining it; or when it is desired to substitute a new and different way more useful to the public; and, of course, it is within the power of a city to vacate a street where all of the property owners adversely affected consent to the vacation. But in all instances the order of vacation must have within it some element of public use, and, even where the order serves a public use, it cannot be exercised against the will of abutting property owners adversely affected, unless the damages they suffer are in some way compensated."

Ordinances Discriminating Against Non-Residents in the Solicitation of Business Are Void.—An ordinance of the town of Ft. Edward, New York, purported to levy a license tax of $1 per day against non-resident hawkers and peddlers. But in the case of People vs. Hervieux, 236 N. Y. Supp. 129, the County Court of Washington County adjudged the measure to be void as involving an unconstitutional discrimination.

The Court made the following quotation from an earlier decision of the Appellate Division of the New York Supreme Court:

"The fundamental law knows no distinction between residents of different political subdivisions of the state, and, while different laws may be enacted for different localities in the state as their varying needs may require, yet those laws must not discriminate between persons lawfully within their jurisdiction; for every resident of the state is entitled to the equal protection of equal laws, and is entitled to go to and fro, and buy, sell, and labor, in any and every part of the state, upon the same terms and conditions —no more, no less—that are imposed upon residents of that particular portion of the state where he chooses to exercise his rights; and any imposition of an additional burden upon him, as a condition of exercising his rights, is depriving him of the equal protection of equal laws, and is contrary to the law of the land."

Two Phases of Local Improvements.—A city may by a single ordinance provide for widening and regrading streets. A property owner may not constitutionally be required to pay doubly for the same benefit received from a local street improvement. (Washington Supreme Court, State vs. Gilliam, 262 Pac. 138.)

Aspects of the Revocation of Building Permits.—"As a general rule," declared the Wyoming Supreme Court in the case of Wikstrom vs. City of Laramie, 262 Pac. 22, "when a city council, or the proper city officer, in the absence of fraud, grants a permit for the construction of a building, and the party acting in good faith thereon commences the erection of a building, he acquires something more than a mere license, something in the nature of a vested right, and the permit cannot then be revoked by the city. . . .

"It is clear that the city is not liable in damages in such case. The immunity from such liability in wrongfully refusing to grant a building permit or wrongfully revoking same is usually placed on the ground that the officers are acting in a governmental capacity."

Incidentally, the Court decided that an injunction against a city's interference with the erection of a building was conclusive, although erroneous, where no appeal was taken from the order or decree granting it.

Taxes Voluntarily Paid under Mistake Held Not Recoverable.—Where a municipality levies a tax upon property believed to be included within the corporate limits, and the owner voluntarily pays the same, and afterwards discovers that the property was not included within the corporate limits, such taxpayer cannot recover the amount of taxes so paid. (Georgia Supreme Court, Darby vs. City of Vidalia, 149 S. E. 223.)

Municipality Held Liable for Negligent Operation of Building Used for Both Business and Governmental Purposes.—In the case of Bell vs. City of Pittsburgh, 146 Atl. 567, the Pennsylvania Supreme Court held that when, in the joint ownership, maintenance, and operation of a building by a city and county, partly for business and partly for governmental purposes, an elevator, used indiscriminately to carry persons to and from the offices, is so operated as to injure a passenger, the county is liable for the negligent act of its servant who causes the injury.

The Court said, in part:

"Where a municipal corporation engages in an activity of business, rather than one of a governmental nature, such as the supply of light and water, which is generally carried on by individuals or corporations, it acts as a private corporation, and not in its sovereign capacity. . . . The fact that some of the activities centered in this building are exclusively of a purely governmental nature will not affect liability, when they are joined with business activities. To separate the various journeys to these different activities by movements of time or particular instances of use would be to destroy the unity of the rule that imposes liability for negligent acts against one of the parties. A trip by one in regard to a governmental function, and a trip by one in respect to business in the same vehicle, cannot be separated when viewing the duty and responsibility of the carriers which transport the parties."

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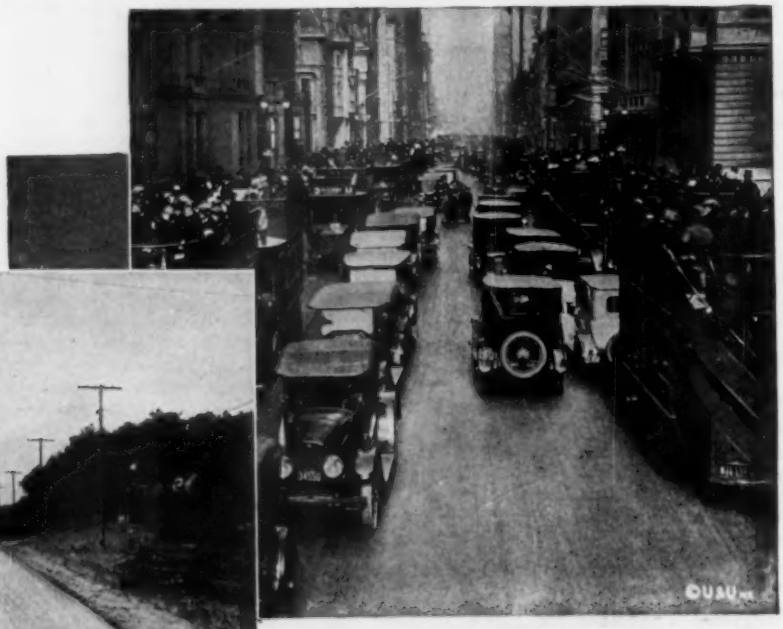

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Mastering a Metropolis

By R. L. Duffus. Harper Brothers, New York. 302 pp. $3.00.

The sponsors of the Regional Plan of New York have already shown commendable enterprise in bringing their work to the attention of the public who alone can translate the plan into reality. Their latest achievement has been the present volume in which R. L. Duffus, well-known magazine and newspaper writer, sums up in a vivid way the material treated more technically and in more detail in the ten volumes of the Survey and Plan series. Mr. Duffus has been particularly successful in catching not only the picturesque, but the significant as well, in the Regional Plan project. In eighteen chapters he has outlined the contribution made in the report to the housing, railroad, traffic and park problems. He concludes with chapters on "How the Plan May Be Carried Out" and "The City of the Future."

Town Government in Massachusetts (1620-1930)

By John Fairfield Sly. Harvard University Press, Cambridge, Mass. 1930. 344 pp. $2.50.

The New England town and town meeting have a unique place in American local government. In the South the county, imported largely from England, was the chief unit of local government and it has spread over the rest of the country where the township is a mere geographical expression with little social or governmental significance. In New England, and particularly in Massachusetts, where the township was first developed along characteristic lines, it remains a respected institution. There are many eastern towns, for example, Framingham and Lenox, which are larger than fair-sized cities. The use of town meetings in towns as large as this must of course be modified or abandoned. Elsewhere it still flourishes, in some instances in places as large as 6,000 population. Dr. Sly has made thorough survey of the development of this unusual institution during the three centuries of its use. He is somewhat critical of its structure and of the sprawling mass of unrelated services. He finds it has, none the less, a record of sustained accomplishment.

A Narrative History of Aviation

By John Goldstrom. The Macmillan Co., New York. 1929. 320 pp. $4.00.

This is an intensely interesting and comprehensive narrative of the history of aviation, written in a smooth style, and is easily understandable to the layman. The book covers important events completely, including many which did not receive great publicity but were deserving of credit. It affords an excellent review for the casual reader of aeronautical activities and will do much in creating "air-mindedness" in the few remaining skeptics who do not appreciate the value of the airplane as a means of transportation and of its future in the spread of civilization. The chapters covering early experiments and the air mail bring to light many interesting incidents that have been slighted in the rush of aviation's progress. Once started, the narrative holds the interest as well as, if not better than, many of our more popular "best sellers."

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National Safety Council: 1929 Transactions—Vol. III

This 325-page volume covers the non-industrial sessions of the 18th Annual Safety Congress (Chicago, September, 1929). The Public Safety Division, Statistics Division, Education Division, and Home Safety Division sessions are included. The 140 pages devoted to Public Safety sessions include, as usual, many valuable papers and discussions on street traffic administration and enforcement. (Apply to National Safety Council, 108 E. Ohio St., Chicago, Ill.)

International Association of Street Sanitation Officials: Proceedings

This Association held its tenth annual conference in Jacksonville, Fla., October 14-16, 1929. The proceedings are reported in a paper-bound booklet of 63 quarto pages. There are included papers on dust prevention on unpaved streets, disposal of street dirt, care of equipment, management of personnel, municipal asphalt plants, generation of steam at incinerators, a permanent anti-litter campaign of cooperation between municipal authorities, civic organizations and high school students, the development of a measurement standard for street sanitation, and the questions of payment by vehicles for street maintenance, and the general future of garbage collection and disposal. A brief report of the Committee on Simplified Uniform Cost Keeping is also given. (Apply to A. M. Anderson, Secretary, 100 North LaSalle St., Chicago, Ill.)

A Manufacturers Division of the Association was organized at the conference; the officers chosen being as follows: President, Charles T. Hvass, Chas. Hvass & Co., Inc., New York; Vice-President, William M. Hannan, Jr., Nye Odorless Incinerator Co., New York; Secretary, George B. Abbott, International Harvester Co. of America, Chicago; and Treasurer, Edgar J. Buttenheim, American City Magazine Corporation, New York.

Specifications for Road Construction, Concrete Highway Bridges, Culverts and Other Highway Structures

A booklet of 39 pages issued by the Board of County Road Commissioners of Wayne County, Michigan. Revised, January, 1930. (Apply to the Board, Detroit, Mich.)

The Water Absorption and Penetrability of Brick

An article reprinted from the Proceedings of the American Society for Testing Materials, by J. W. McBurney, Research Associate of the Common Brick Manufacturers Association of America at the United States Bureau of Standards. 20 pp. (Apply to the author, Washington, D. C.)

Unemployment: What Can Be Done About It?

Rev. John A. Ryan, D.D., Director, Social Action Department, National Catholic Welfare Conference, is the author of a 30-page brochure on this subject. The material, reprinted from *The Commonweal*, is presented in the form of four articles: "Partially Effective Remedies"; "Chronic Unemployment"; "Higher Wages"; and "Reducing Working Time." The two former are appraisals of the present situation and public policy toward it; the two latter are considerations of remedies. (Apply to Social Action Dept., National Catholic Welfare Conference, 1312 Massachusetts Ave., N. W., Washington, D. C.)

Housing and Building

With the January-February, 1930, issue of its official organ, the International Housing Association becomes its own publisher, and will hereafter present *Housing and Building* on a bi-monthly basis, and in German, English, and French. The initial issue under this arrangement is a well-printed, well-illustrated journal of 48 pages, containing, among other material, articles on "American Cottage Homes"; on the cooperative building associations movement in Sweden; and an article on "Public Utility Building in Norway." The publication is free to members; and $4 per year to others. (Apply to Dr. Hans Kampffmeyer, General Secretary, Frankfort on Main, Bockenheimer Landstrasse 95.)

Public Ownership on Trial

The 25 publicly owned electric power systems in California have been the subject of a detailed study by the authors of this booklet, Frederick L. Bird and Frances M. Ryan. These systems range from that of Los Angeles, the largest in the country, to the municipal distributing system in a town of 500 people. The growth of municipal ownership of light and power in California is sketched, and the physical and financial statistics, and the management of the municipal systems, are described and discussed. The Los Angeles and Pasadena systems, the development of publicly owned power in irrigation districts, and the state law concerning municipal ownership, are treated in special chapters. As stated in a foreword by Dr. John Bauer, "This study of municipal systems in California should be hailed with delight by all seekers of truth who are not dedicated to a doctrine, and who are seeking the most satisfactory form of organization considered from the standpoint of service and rates." 186 pp. 75c. (Apply to the New Republic, Inc., 421 West 21st Street, New York.)

The Power Trust vs. Municipal Ownership

A booklet of 207 pages, presenting in popular vein various aspects of the case against the large private power companies and their joint associations, and in favor of municipal ownership of electric power systems. It was compiled by Harry Lee Williams' from various sources, particular credit being given to J. F. Christy, manager of the Jonesboro, Ark., Water, Light and Power Plant, and constitutes Bulletin No. 45 of the Public Ownership League of America. Illustrated with many cartoons. $1.50. (Apply to the League, 127 North Dearborn St., Chicago, Ill.)

Oil Engine Power Plant Handbook

This useful handbook and purchasing guide is now in its fifth edition and contains 288 pages. It has three editorial sections, entitled Diesel Operating Manual, Diesel Plant Accessories, and Diesel Uses and Economics, wherein there is presented much information regarding methods and principles of operation, details of equipment, buildings and foundations, and plant bookkeeping, and the applications of diesel power. There are many diagrams, photographs, charts, etc., included as illustrations. The volume, which is of quarto size, in semi-stiff cloth covers, is published by *Oil Engine Power* (now *Diesel Power*), and is edited by Julius Kuttner, editor of that monthly journal. $5.00. (Apply to *Diesel Power*, 521 Fifth Ave., New York.)

American Society for Testing Materials: Proceedings

The 32d annual meeting of this Society, held in Atlantic City, N. J., June 24-28, 1929, is reported in Parts I and II of Volume 29 of the annual Proceedings, of 921 and 1,016 pages respectively. In Part I are found the president's annual address, the report of the executive committee, and annual reports of 43 standing and research committees and of five sectional and joint committees, and a statement of new and revised tentative standards submitted at the annual meeting. Part II includes 56 technical papers with discussion, among them being symposiums on physical properties of cast iron and on mineral aggregates; reports of expert investigations in respect to engineering materials, including research problems concerned with cohesion and atomic structure, and fatigue, particularly corrosion-fatigue, of metals; and papers on non-ferrous metals, cement, concrete and brick, bituminous mixtures, rubber, and new testing apparatus. $6.00 for each part, in paper binding: $6.50 in cloth; and $8.00 in half-leather. (Apply to the Society, 1315 Spruce St., Philadelphia, Pa.)

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The Condemnation Procedure of 23 Cities

The Detroit Bureau of Governmental Research has made, and Howard G. Fishback, Secretary of the Taxpayers Association of Fall River, Mass., has presented in the form of an 8-page abstract issued in mimeograph form by the Municipal Administration Service of New York, a study on the above subject. The study was conducted by correspondence. It shows general practice on such points as these: Who first determines that property shall be taken by condemnation? Who finally determines the necessity for the improvement? What is appraisal procedure? In what court and by what authority is condemnation cost actually determined? 10c. (Apply to Municipal Administration Service, 261 Broadway, New York.)

Proceedings, Annual Meeting, Governmental Research Association

Addresses, discussions, and group session papers from the Governmental Research Association's annual meeting held at Chicago, November, 1929, are reprinted in full, or summarized, in the Proceedings volume. This has 132 multigraphed pages, and is bound in blue paper, uniformly with former years' reports. Important among features of the opening general session were the addresses on "Advances in Government during the Past Year," by Richard S. Childs, Luther Gulick, and Leo Tiefenthaler. These are adequately summarized. A. R. Hatton, Charles E. Merriam, Thomas H. Reed, and Clarence E. Ridley are other names represented in the sizable number of authorities in different departments of municipal and civic government on the program. $2. (Apply to the Association, 261 Broadway, New York.)

1929 Tax Rate Book

The League of Kansas Municipalities, as in former years, has compiled figures including tax rates and operation statistics for the 575 cities, the 575 city schools, and the 105 counties. These comprise City Bulletin No. 74 (40 pp.), which is available from the League at $1 per copy. (Apply to the League, Lawrence, Kans.)

St. Louis Buries a River

W. W. Horner, Chief Engineer of the St. Louis Board of Public Service, tells in an interview in *City Beautiful*, November, 1929, how "St. Louis Puts the River Des Peres into Its Place." This is being done as a flood-control measure. The project represents "a major operation." It consists of constructing a twin-tube sewer, "probably the biggest and best sewer in the world, both as to volume of flow and as to substantiality of construction." The work, for which studies were commenced as early as 1907, will be completed in 1931. 2 pp. (Apply to the publication, Boatsmen's Bank Bldg., St. Louis, Mo.)

Economic Effects of Zoning a City

This is the title of a 14-page pamphlet published by the National Association of Real Estate Boards, 310 S. Michigan Ave., Chicago. Its author, W. L. Pollard, is chairman of various realtors' committees on city planning and zoning. He here presents zoning experiences and trends in various cities, and shows that "the realtor who fails to interest himself in this phase of social development to his city is failing in his duty to himself and to his client." (Apply to the author, 523 Associated Realty Bldg., Los Angeles, Calif.)

The City Government of Atlantic City, N. J.

A survey prepared for the Atlantic City Survey Commission by the Detroit Bureau of Governmental Research for the primary purpose of discovering ways to possible economies in the city's governmental operations. The survey personnel included: Lent D. Upson, Ph.D., Director, Detroit Bureau of Governmental Research; C. E. Rightor, Chief Accountant, and J. M. Leonard, Accountant, of the Bureau; William H. Allen, Ph.D., Director, Institute for Public Service, New York City; Cornelius Cahalane, Police Consultant, formerly Police Inspector, New York City; K. J. McCarren, City Assessor, Detroit, Mich.; and Harrington Place, C.E., Engineer, Detroit Bureau of Governmental Research. 184 multigraphed pp., cardboard-bound, and indexed. $2. (Apply to the Bureau.)

An Economic Analysis of the Constitutional Restrictions Upon Municipal Indebtedness in Illinois

This study, by Ward L. Bishop, Assistant Professor of Economics, Lehigh University, is published in the University of Illinois Studies in the Social Sciences under date of March, 1928 (although just recently appearing). The study deals with an important aspect of the matter of municipal indebtedness, political and legal considerations being subordinated to economics in this study, as presumably in the actual working out of the problem. A considerable amount of field work was required. 113 pp. $1. (Apply to Director of the University Press, University of Illinois, Urbana, Ill.)

The Plan of Palm Beach, Fla.

Bennett, Parsons and Frost, consulting architects, of Chicago, have prepared under direction of the Palm Beach Garden Club, and the Town Council has formally accepted, the new Town Plan. Briefly, the Plan provides for: A Public Bath, Public Gardens, A Botanical Garden; A System of Trails or Walks, with Grade Separation; An Improved Street System, Public Buildings. The large de luxe volume in which it is presented, is done in vivid color with a nice feeling of the town's Spanish character, and with a group of the architect's drawings, also in color. 28 pp. Limited edition. (Apply to Mrs. George A. McKinlock, President, Palm Beach Garden Club, Palm Beach, Fla.)

Survey of the Minneapolis Police Department

August Vollmer, Professor of Police Administration, University of Chicago, directed the Minneapolis Police Survey, authorized by the City Council, and published in the form of a 200-page quarto volume (cardboard-bound) under date of January, 1930. The contents are presented under the following heads: Police Problems; Organization and Control; Personnel; The Record System; Equipment; Finances; and a Summary; the whole being prefaced by summarized principal findings and summarized recommendations. It is noteworthy that a study of this nature is made under authorization of a city council rather than a civic body as is usually the case. (Apply to Standing Committee on Police, Minneapolis, Minn.)

Report of the Queens Planning Commission

The Borough of Queens is a part of Greater New York City. The Planning Commission was appointed last year by Borough President Harvey to formulate plans for its systematic and well-regulated future growth. The first report, published as of the year 1929, represents studies and recommendations made by a group of sub-committees on: Highways, Parks, and Parkways; Bridges, Tunnels and Ferries; Transit and Traffic; Zoning and Buildings; Harbors, Coasts and Airports; Sewers, Public Safety; Law, Resolutions, Legislation, and Taxation; and Finance; a committee on General Plan and Scope; and a group of technical assistants. 102 quarto pp.; cloth-bound. (Apply to Alfred Gross, Secretary of the Commission.)

Atmospheric Pollution Analysis, Cleveland, Ohio

Howard Whipple Green, Secretary and Sanitary Engineer, Cleveland Health Council, has made, and the Health Council has published (in a 26-page, multigraphed, illustrated brochure) comparative air pollution facts and figures for a two-year period, 1927-1929. Summarized findings include these: There was an average, at the 10 collection stations, of 65 tons of deposit per square mile per month. This means that the 71 square miles of the city's area is blanketed annually with a 55,000-ton deposit of solid particles; and that, of this, downtown Cleveland gets 1,400 tons per square mile per year. The report shows that during the period that the monthly soot-fall measurements were being made, the Cleveland Division of Smoke Inspection was able to bring about substantial permanent improvements in fuel combustion in a large number of installations, and a corresponding decrease in black smoke. (Apply to the Council.)

Promoting New Hotels: When Does It Pay?

By W. I. Hamilton. Harper & Brothers, New York. 158 pp. 1930. $2.50.

This little volume is full of warning for those who would hurry into new hotel ventures without calculating the cost. An elaborate survey, sponsored by a group of large hotel interests and made by the Engineering Economics Foundation, demonstrated the serious over-production and over-financing of the hotel business in the United States. Taking these figures for his text, the present author seeks to establish certain canons of caution applicable to new hotel enterprises. The city planner will be interested in what he has to say of the relation of the hotel to its city and the latter's hinterland. The economist will be challenged by his theories of hotel costs.

Mid-Manhattan—the Multimillionarea

By Martin Clary. Published by the Forty-Second Street Property Owners and Merchants Association, New York. 1930. 215 pp. $5.00.

This handsome quarto volume offers vivid testimony of the great changes wrought in New York City even in the single decade just closed. It is abundantly illustrated with photographs and drawings of the principal scenes and buildings which have made this region the greatest in a great city. There are chapters dealing with the jewelry, clothing, printing and other crafts in which the city leads and with the transportation and other facilities which have opened the way to greatness. There is generous mention also of the builders and architects whose work is so solidly evidenced by the entire district.

Fire Waste and Insurance Rates in Boston

The Albert Russel Erskine Bureau, Harvard University (Miller McClintock, Director), and the Field Engineering Department, National Fire Protection Association, New York (Horatio Bond, Engineer), have assisted the Mayor's Committee on Fire Insurance Rates, of Boston, in preparation of this report. Perhaps no such complete and scientific study has hitherto been made. 320 pp., buckram-bound, elaborately illustrated with photographs and charts. Certain of its findings were presented in THE AMERICAN CITY in advance of the volume's publication (page 111, February, 1930).

The Regional Plan of Highways, Los Angeles County, Calif., Section 2E.

This is a report of the Regional Plan of Highways for the San Gabriel Valley. It is the first "milestone of progress toward a comprehensive plan for Los Angeles County." Number one of the three parts into which it is divided is therefore introductory and general. The second, "The San Gabriel Valley Highway Plan," makes clear the relation of the present report to the Regional Plan; the correlation of the highway plan with other phases of the plan; its relation to other means of transportation; and its financing. Of particular significance are the grade-crossing control recommendations and the ten-year program for grade separations; and the presentation of the highway plan in its relation to aviation. Part three has to do with the carrying-out of the plan. The whole, clothbound and illustrated with drawings, photographs, and inset four-color maps, is an exceptionally competent piece of bookmaking. (Apply to the Regional Planning Commission, Hall of Records, Los Angeles, Calif.)

A Health Inventory of New York City

By Michael M. Davis and Mary C. Jarrett. Study 1, of the Research Bureau, Welfare Council of New York City, under the above title, is a volume of 367 pages, cardboard-bound. There is a chapter of 61 pages constituting a "General Report." Following, are chapters on Child Hygiene; Maternity Hygiene; Tuberculosis Control; Venereal Disease Control; Dental Hygiene; Health Examination; Mental Hygiene; Control of Heart Disease; Cancer Control; Control of Eye Disorders; Health Education. The whole, to quote from the introduction by Dr. C.-E. A. Winslow, represents "one of the ablest contributions in this field that have been made in recent years." $2. (Apply to the Welfare Council of New York City, 151 Fifth Ave., New York.)

View on 19 mile stretch of Kyrock surface on the Jackson Highway in Barren County, Ky. State and Federal Aid. Kyrock on macadam. Built 1921-22. Photographed January 11, 1930. Nine years service. No maintenance to date. The Kyrock surface is without waves or ruts, apparently as good as when laid. Kyrock does not lose its *life*.

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American Influences on Canadian Government.—By William B. Munro. The Macmillan Co. of Canada. 1929. 143 pp. $1.75.

This little volume contains three lectures given by Professor Munro at the University of Toronto last year. The first two of these deal with comparisons and contrasts between Canadian constitutional and political institutions and our own. Of most particular interest is the last lecture, in which so eminent an authority on American and European municipal governments surveys Canada's contributions to this field. Professor Munro finds that, of all branches of government in Canada, their cities have proved most susceptible to American influence. Canadian cities have taken many things from "the world's chief laboratory for municipal experimentation" to the south of them. Indeed, he finds they have borrowed indiscriminately, bad things as well as good.

JOSEPH MCGOLDRICK.

This Aviation Business.—By Ernest W. Dichman. Brentano's, New York. 274 pp. $3.50.

Undoubtedly the best popular book on the aviation business. Written by an experienced aeronautical engineer, but in a most entertaining style that gives it all the interest of a best seller. Incidentally it serves a valuable purpose in stating facts as they really are instead of as we should like to have them. Mr. Dichman's comments on stunt flying should be read by every pilot, and his chapter on opportunities by every aspirant for a place in the industry.

ARCHIBALD BLACK.

Water Power in New York State.—The complicated situation regarding the development of water power, particularly of the St. Lawrence River, in New York State, is interestingly set forth in this supplement to the *National Municipal Review* for February, 1930, by A. Blair Knapp. The Water Power Act of 1921, passed under Republican auspices, its administration, first under Republican and then under Democratic governors, including the conflict between Legislature and Executive, the Water Power Authority proposed by Governors Smith and Roosevelt, together with comments on the present situation, are taken up in order. 26 pp. 50c. (Apply to the National Municipal League, 261 Broadway, New York City.)

Leeds and Bradford Region Joint Town Planning Committee, Report II.—The first part of the adopted preliminary report was published in 1926. The second and concluding portion is presented in the present 45-page quarto volume, which has a pocket insert for the large accompanying folded maps. It provides in detail for carrying the regional scheme, broadly outlined in Part I, into effect in the Statutory Town Planning Scheme, and looks to giving it effectiveness in general. Subjects to which chapters are devoted include: Zoning Regulations; Neighborhood Centers and Civic Centers; Regional Open Spaces; and Communications. (For further information, address Thomas Thornton, Hon. Secretary, 11 Park Square, Leeds, England.)

The East Kent Regional Planning Scheme.—Patrick Abercrombie, of the Department of Civic Design, University of Liverpool, and John Archibald, consultant, have submitted their final planning report to the Joint Town Planning Committee of Local Authorities. Ten sections follow the introduction: Proposed Zoning; Communications; Public Services; and the Economic Effect of These; Preservation of Amenities; Buildings—Design, Density and Heights; Estimated Colliery Development; and Steps Toward Realization; also Administration Under the Town Planning Act; and an Appendix on Zones. (Apply to the publishers, P. W. Austen, St. George's Street, Canterbury, England.)

Annual List of Publications, National League of Women Voters.—The 30-page pamphlet cataloging the 1929 publications of the National League of Women Voters is indexed and arranged for ready reference. It includes valuable material on local government and civic affairs, mostly available at the cost of a few cents. (Apply to 532 Seventeeth St., N. W., Washington, D. C.)

Neighborhood and Community Planning.—Survey Volume VII of the Regional Plan of New York and Its Environs, 130 East 22nd Street, New York. 1929. 365 pp. Illustrated. $3.00. Complete set of Survey and Plan volumes, $50.00.

This volume comprises three monographs: "The Neighborhood Unit," by Clarence Arthur Perry; "Sunlight and Daylight for Urban Areas," by Wayne D. Heydecker in collaboration with E. P. Goodrich; and "Problems of Planning Unbuilt Areas," by Thomas Adams, Edward M. Bassett, and Robert Whitten. Unlike the preceding volumes, this one is put forward as dealing, in general, with ideas applicable to all cities, large and small, throughout the country; and as embodying original researches of wide practical value to the city planning profession and others.

Taxation and Indebtedness of Local Governments in Pennsylvania.—A 22-page pamphlet by Leonard P. Fox, Ph. D., Manager, Research and Information Bureau, Pennsylvania State Chamber of Commerce. It takes up the increase in taxes and debt, discusses the expenditures represented by the present situation, and makes suggestions for further local analysis and better financial methods. (Apply to the author, Harrisburg, Pa.)

How to Make a Real Estate Market Survey.—A brief outline of procedure for this type of survey, with suggested forms, gotten out by the National Association of Real Estate Boards. 10 pp. (Apply to the Association, 310 S. Michigan Ave., Chicago, Ill.)

Ruhrverband-Jahresbericht 1929 (1929 Report of the Ruhrverband).—A presentation of last year's accomplishments of the public works in the Ruhr district under unusually low water conditions, by Dr. Imhoff. 6 pp. of text, 6 pp. of 23 photographs, and 3 colored charts. (Apply to the author, Ruhrverband, Essen, Germany.)

Safety in Dam Construction.—A paper by Allen Hazen, which takes up the safety characteristics of various types of dams, with particular reference to sliding. 19 pp. (Apply to the author, 25 W. 43rd St., New York.)

Sewage Works Odors and Their Control.—A 10-page reprint from *Sewage Works Journal* for October, 1929, of an article by Morris M. Cohn, Sanitary and Testing Engineer, Department of Public Works, Schenectady. (Apply to the author.)

Cross-Connections.—The final report of the Committee on Cross-Connections, New England Water Works Association. This was presented December 12, 1928, and appeared in the March, 1929, number of the *Journal* of this association, from which it is reprinted by permission as Technical Publication No. 99 of the Wallace & Tiernan Co., Inc., Newark, N. J. 24 pp., including extensive appendices. (Apply to Wallace & Tiernan Co., Inc.)

Street Cleaning and Refuse Collection and Disposal in European Cities, with Suggestions Applicable to New York.—George A. Soper, Ph.D., reports in this illustrated 31-page pamphlet the results of his investigations on the subject to the Committee of Twenty on Street and Outdoor Cleanliness, of the New York Academy of Medicine, October, 1929. (Apply to the Committee, 2 E. 103rd St., New York.)

Report of the Westchester County Sanitary Sewer Commission.—A handsome booklet of 44 pages covering the period from June 7, 1926, the date of the Commission's appointment, to November 20, 1929. Various maps and illustrations are included in describing the extensive sewerage work planned and being carried out by this body. (Apply to the Commission, Court House Annex, White Plains, N. Y.)

Industrial Problems of the Community.—The Division of Municipal and Industrial Research of the Massachusetts Institute of Technology has issued under above title, January, 1930, a 4-page pamphlet. It is of interest to municipal and civic bodies concerned with the most orderly development of their cities. (Apply to the Institute, Cambridge, Mass.)

Planning.—With the issue of January, 1930, this new publication of the Pennsylvania Association of Planning Commissioners of borough, city, county, state, and region, makes its appearance, with Francis J. Mulvahill as editor. It is a newsy little sheet designed to keep local associations in closer touch with developments throughout the state between annual conferences. (Apply to the Association, State House, Harrisburg, Pa.)

Personnel and Salaries of Fire Departments in Wisconsin Cities, 1929.—Information report No. 75 of the Municipal Information Bureau, University of Wisconsin, is a 24-page multigraphed bulletin compiled by Celia Harriman. Information, gathered during October and November, 1929, and representing that year, brings up to date similar reports by the Bureau, the last of which was dated 1926. 25c. (Apply to the Bureau, Madison, Wis.)

A Major Street Plan for Louisville, Ky.—The 80-page preliminary report of a street system for Louisville, recently issued, is the work of Harland Bartholomew and Associates, planning engineers, St. Louis, Mo., and is the first of a series of studies that are to comprise the comprehensive city plan. It includes a running survey of the city's growth and characteristics, and of present street conditions; recommendations for a major street plan and for its accomplishment; also a business district plan. In scope it covers the city and a three-mile area around it; and it is prepared and presented in conformity with the usual high standards of this organization's published works. (Apply to Louisville City Plan Commission.)

Prison Architecture.—The National Committee on Prisons and Prison Labor, 4 West 57th St., New York, has issued an attractively printed 30-page brochure, containing an illustrated article by Robert L. Davison, from the Technical News and Research section of the *Architectural Record*, January, 1930. Prison planning in America is extremely backward from the standpoints of modern architecture and social justice. As an aid to raising standards, presentation is made of studies of the latest and best discoverable designs. (Apply to the Committee.)

Light.—By Lawrence Veiller. Publication No. 50, National Housing Association, 105 E. 22nd St., New York, January, 1930. Mr. Veiller is convinced that God's fiat, "Let there be light," has been insufficiently interpreted by city planners into a primary working principle of their profession. He invokes past and future to testify whether, on account of this shortcoming, our civilization is not a benighted one. The first scientific attempts in this country towards adequate sunlight for built-up areas, he says, were those of Herbert S. Swan and George W. Tuttle, made in New York and first given circulation in THE AMERICAN CITY (September, 1917) under the title, "Planning Sunlight Cities." What can present-day planners still learn from these, "the most important contribution to the *science* of city planning heretofore made in the country!" What about the laws of ancient lights, in America! What about smoke! The ultraviolet ray! These and other questions are answered in this 30-page booklet. (Apply to the Association.)

Other Reports Received

ASHLAND, KY.—Industrial booklet. Chamber of of Commerce. 48 pp.

BALTIMORE, MD.—Directory, Association of Commerce, 1930. 248 pp.

BRADFORD, PA.—Mayor's Annual Message, as of January 6, 1930. 8 pp.

CINCINNATI, OHIO.—Annual Report, City Manager, 1929. 28 pp.

FITCHBURG, MASS.—Annual Report, Chamber of Commerce. 1929. 10 pp.

MANSFIELD, MASS.—Annual Municipal Report. 1929. 160 pp.

COMMONWEALTH OF MASSACHUSETTS.—Annual Report, Department of Public Welfare, Division of Housing and Town Planning, to November, 1929. 10 pp.

STAUNTON, VA.—Annual Report, Health Department, 1929. 11 pp.

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CONVENTIONS—WHEN AND WHERE

MARCH 13-15.—ST. PAUL, MINN.
Minnesota Association of Commercial Secretaries. Annual meeting. Secretary, P. H. Unumb, Chamber of Commrce, Alexandria, Minn.

MARCH 13.—CONCORD, N. H.
New Hampshire Good Roads Association. Annual meeting. Secretary, Frank D. Sleeper, Laconia, N. H.

MARCH 17-18.—ALLENTOWN, PA.
Pennsylvania State Association of Township Commissioners. Annual convention. Secretary-Treasurer, M. B. Black, Annville, Pa.

MARCH 18.—CHICAGO, ILL.
Midwest Safety Conference. Annual conference. Manager, George G. Traver, Chicago Safety Council, 330 South Wells Street, Chicago, Ill.

MARCH 19-20.—CLEVELAND, OHIO.
National Association of State Chambers of Commerce. Convention. Secretary, George B. Chandler, Ohio State Chamber of Commerce, Columbus, Ohio.

MARCH 21-22.—TRENTON, N. J.
New Jersey Sewage Works Association. Annual meeting. Secretary, John R. Downes, Bound Brook, N. J.

MARCH 24-28.—CLEVELAND, OHIO.
Building Officials' Conference. Secretary-Treasurer, Col. John W. Oehmann, Inspector of Buildings, District Building, Washington, D. C.

MARCH 24-25.—KANSAS CITY, MO.
Central States Safety Congress. Annual Congress. Address: National Safety Council, 168 North Michigan Avenue, Chicago, Ill.

MARCH 27.—PORTLAND, ORE.
Oregon State Chamber of Commerce. Annual meeting. Manager, W. G. Ide, Suite 220-224 Oregon Building, Portland, Ore.

APRIL 2-5.—BOSTON, MASS.
American Physical Education Association. National convention. Secretary, Dr. J. H. McCurdy, Box G, Highland Station, Springfield, Mass.

APRIL 6-9.—DAYTONA BEACH, FLA.
Southern Commercial Secretaries Association; Florida Commercial Secretaries Association. Joint meeting. Chairman, Karl Lehman, Orange County Chamber of Commerce, Orlando, Fla.

APRIL 10-11.—GAINESVILLE, FLA.
American Water Works Association, Florida Section. Annual meeting. Secretary, E. L. Filby, P. O. Box 135, Jacksonville, Fla.

APRIL 10.—KINSTON, N. C.
Eastern Carolina Chamber of Commerce. Annual meeting. Secretary, N. G. Bartlett, Kinston, N. C.

APRIL 14-19.—MEMPHIS, TENN.
National Flood Control and Navigation Congress and Exposition. Address: R. E. Logsdon, Director of Chamber of Commerce Convention Bureau, Memphis, Tenn.

APRIL 15-17.—SAVANNAH, GA.
American Water Works Association, Southeastern Section. Annual convention. Secretary, F. W. Chapman, Superintendent of Water Department, Camden, S. C.

APRIL 17-19.—MISSOULA, MONT.
American Water Works Association, Montana Section. Annual meeting. Secretary, Herbert B. Foote, Division of Water and Sewage, State Board of Health, Helena, Mont.

APRIL 17-19.—OCALA, FLA.
Florida Engineering Society. Annual meeting. Secretary, R. L. Reed, Gainesville, Fla.

APRIL 22-27.—MEXICO CITY, MEXICO
Highway Congress of Mexico. Third Congress. Secretary, Jose Rivera, Care of the Comision Nacional de Caminos, Nuevo Mexico 90, Mexico City, Mexico.

APRIL 24.—BATON ROUGE, LA.
Louisiana Chamber of Commerce. Annual meeting. General Manager, Herbert Bayliss, P. O. Box 486, Baton Rouge, La.

APRIL 28-MAY 1.—WASHINGTON, D. C.
Chamber of Commerce of the United States of America. Annual meeting. Secretary, D. A. Skinner, 1615 H Street, N. W., Washington, D. C.

APRIL 28-MAY 3.—LOUISVILLE, KY.
National League of Women Voters. Convention. Executive Secretary, Miss Gladys Harrison, 532 17th Street N. W., Washington, D. C.

APRIL 29-MAY 1.—MINNEAPOLIS, MINN.
American Forestry Association. Annual meeting. Executive Secretary, Ovid M. Butler, 1523 L Street N. W., Washington, D. C.

APRIL 30.—WASHINGTON, D. C.
National Association of Commercial Organization Secretaries. Mid-Year Banquet Meeting. Secretary-Treasurer, William J. Russell, Chamber of Commerce of the Borough of Queens, Long Island City, N. Y.

MAY 2-3.—PHILADELPHIA, PA.
American Academy of Political and Social Science. Annual meeting. Secretary, J. P. Lichtenberger, 3622-24 Locust Street, West Philadelphia, Pa.

MAY 3-6.—WASHINGTON, D. C.
American Red Cross. Annual convention. Secretary, Mabel T. Boardman, National Headquarters, Washington, D. C.

MAY 5-10.—WASHINGTON, D. C.
International Congress on Mental Hygiene. First Congress. Administrative Secretary, John R. Shillady, 370 Seventh Avenue, New York.

MAY 6.—MADISON, WIS.
Rock River Valley Safety Conference. Secretary, A. E. Gillett, Association of Commerce, Madison, Wis.

MAY 12. WEEK OF.—ATLANTIC CITY, N. J.
National Fire Protection Association. Annual meeting. Managing Director, Franklin H. Wentworth, 60 Batterymarch Street, Boston, Mass.

MAY 13-14.—HAGERSTOWN, MD.
Maryland Water and Sewage Association. Annual conference. Secretary, F. W. Caspari, 2411 North Charles Street, Baltimore, Md.

MAY 21-23.—WASHINGTON, D. C.
American Institute of Architects. Annual convention. Executive Secretary, E. C. Kemper, The Octagon, Washington, D. C.

JUNE 2-6.—ST. LOUIS, MO.
American Water Works Association. Annual convention. Secretary, Beekman C. Little, 29 West 39th Street, New York.

JUNE 2-5.—BUFFALO, N. Y.
National Urban League. Annual meeting. Executive Secretary, Eugene K. Jones, 17 Madison Avenue, New York.

JUNE 5-6.—WASHINGTON, D. C.
Association of Community Chests and Councils. Annual meeting. Executive Director, Allen T. Burns, 1815 Graybar Building, New York.

JUNE 5-14.—DENVER, COLO.
General Federation of Women's Clubs. Meeting. Director of Headquarters, Miss Josephine Junkin, 1734 N Street N. W., Washington, D. C.

JUNE 5-7.—PLAINVIEW, TEXAS.
Texas Commercial Executives' Association. Annual convention. Secretary, Paul T. Vickers, Midland, Texas.

JUNE 6-14.—BOSTON, MASS.
National Conference of Social Work. Annual conference. General Secretary, Howard R. Knight, 277 East Long Street, Columbus, Ohio.

JUNE 7-12.—BOSTON, MASS.
International Association of Policewomen. Annual meeting. President, Mrs. Mina C. VanWinkle, 630 Louisiana Avenue, Room 3, Washington, D. C.

JUNE 8-14.—BOSTON, MASS.
National Community Center Association. Semi-annual meeting. Secretary, LeRoy E. Bowman, 403 Fayerweather Hall, Columbia University, New York.

JUNE 17-19.—DENVER, COLO.
International Association of Comptrollers and Accounting Officers. Convention. Secretary, Carl H. Chatters, City Auditor, Flint, Mich.

JUNE 23-26.—SAN FRANCISCO, CALIF.
American Electric Railway Association. Convention. General Secretary, J. W. Welsh, 292 Madison Avenue, New York.

JUNE 23-27.—TORONTO, ONT.
American Institute of Electrical Engineers. Annual summer convention. National Secretary, F. L. Hutchinson, 33 West 39th Street, New York.

JUNE 23-25.—DENVER, COLO.
National Conference on City Planning. Annual conference. Secretary, Flavel Shurtleff, 130 East 22nd Street, New York.

JULY 13-19.—PALO ALTO, CALIF.
Western School for Commercial Secretaries. Annual session. Manager, Roy W. Smith, Palo Alto, Calif.

JULY 14-17.—LIEGE, BELGIUM.
JULY 18-19.—ANTWERP, BELGIUM.
International Union of Local Authorities. International Congress. General Secretary, E. Vinck, Rue de la Regence, Brussels, Belgium.

AUGUST 3-16.—EVANSTON, ILL.
National Institute for Commercial and Trade Organization Executives. Annual session. Secretary, John N. Van der Vries, 607 First National Bank Building, Chicago, Ill.

AUGUST 12-16.—DENVER, COLO.
International Association of Municipal Electricians. Convention. Secretary, H. N. Lang, P. O. Box 1864, Orlando, Fla.

SEPTEMBER 8.—HALIFAX, N. S.
International Association of Fire Fighters. Convention. Secretary-Treasurer, George J. Richardson, A. F. of L. Building, Rooms 105-06, Washington, D. C.

SEPTEMBER 9-12.—WINNIPEG, MANITOBA.
International Association of Fire Chiefs. Annual convention. Secretary, James J. Mulcahey, Fire Chief, Yonkers, N. Y.

SEPTEMBER 24-26.—QUEBEC, QUE.
Canadian Good Roads Association. Annual convention. Secretary-Treasurer, George A. McNamee, New Birks Building, Montreal, Que.

SEPTEMBER 24-27.—SAN FRANCISCO, CALIF.
International City Managers' Association. Annual convention. Executive Secretary, Clarence E. Ridley, 923 East 60th Street, Chicago, Ill.

SEPTEMBER 29-OCTOBER 4.—PITTSBURGH, PA.
National Safety Council. Annual convention. Managing Director, W. H. Cameron, 108 East Ohio Street, Chicago, Ill.

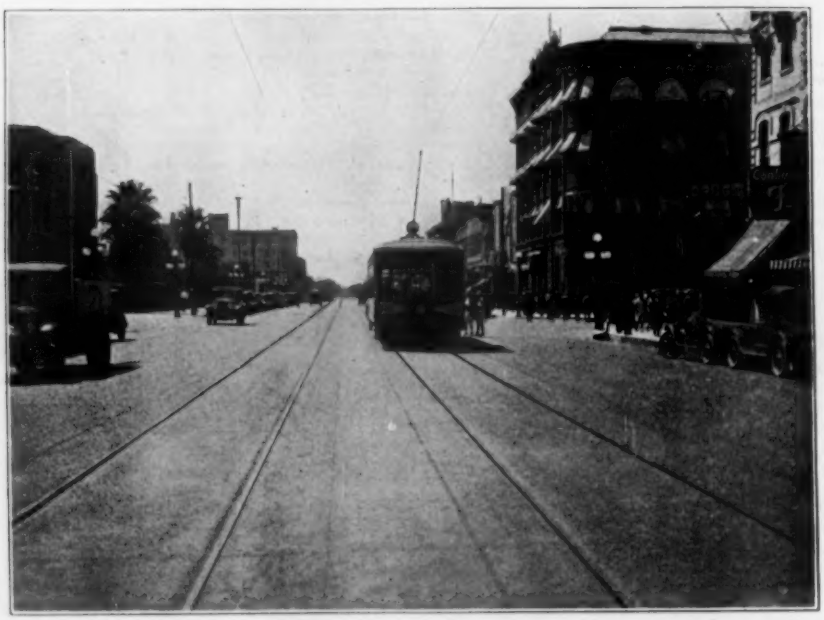
OCTOBER 6-11.—ATLANTIC CITY, N. J.
Playground and Recreation Association of America. Annual convention. Secretary, Howard S. Braucher, 315 Fourth Avenue, New York.

OCTOBER 13-17.—RICHMOND, VA.
American Society for Municipal Improvements. Annual meeting. Secretary, C. W. S. Sammelman, 315 Commercial Building, St. Louis, Mo.

OCTOBER 19-22.—TULSA, OKLA.
National Association of Commercial Organization Secretaries. Annual convention. Secretary-Treasurer, William J. Russell, Chamber of Commerce of the Borough of Queens, Long Island City, N. Y.

OCTOBER 27-31.—FORT WORTH, TEXAS.
American Public Health Association. Annual meeting. Executive Secretary, Homer N. Calver, 370 Seventh Avenue, New York.

"MONOLITHIC WITH THE BASE"



Tracks of Street Railway Department City of Phoenix, Ariz.

DESIGN and construction of track-zone paving is simplified when the pavement is concrete. Years of experience and research have demonstrated that concrete is the best material available for street pavements—and for either light or heavy traffic. When car tracks are embedded in concrete, the track structure acts as a unit. The concrete supports the rail *both vertically* and *laterally*. This assists the rail in carrying bending stresses, and eliminates the necessity for tie-rods. Low, light weight T-rail sections may be used. Concrete track-zone paving is lowest in construction cost, lowest in upkeep cost, and affords the best surface for traffic.

Investigate these Statements . . . . Information on Request

PORTLAND CEMENT *Association*

Concrete for Permanence

33 West Grand Avenue, Chicago

NEWS AND ILLUSTRATIONS

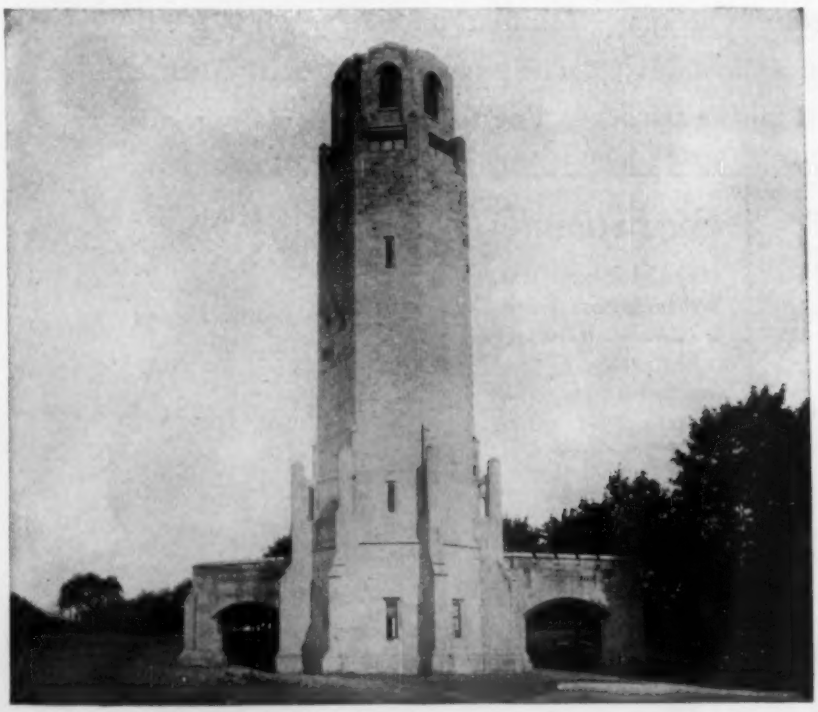
Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

Cemetery Entrance Tower Houses Water-Supply Tank

At the entrance to the Kensico Cemetery at Valhalla, N. Y., stands a beautiful stone tower of Gothic design, faced with Indiana limestone. The shaft in the center is approximately 100 feet in height, and wings arch over the avenue on either side.

Enclosed in this shaft is a 95,000-gallon steel water-tank which is filled from a 400-foot artesian well less than 100 feet from the tower. At the present time Kensico Cemetery comprises 461 acres, about 100 of which are developed and available for sale and immediate interment. Water from the enclosed tank is piped to all buildings on the property and to hydrants through the grounds. Only a few miles of water-mains have as yet been laid, but more are being added, and eventually the entire cemetery will be supplied with water from hydrants located short distances apart.

The steel tank was erected in place on a foundation 13 feet high by a crew of the Chicago Bridge and Iron Works, Chicago, Ill., under the direction of C. G. Lee. The ornamental enclosure was designed by Lovell and Lovell, New York architects, and constructed by J. S. Quinby's Sons, Inc., of Chappaqua, N. Y.



KENSICO CEMETERY ORNAMENTAL ENTRANCE TOWER ENCLOSING 95,000-GALLON WATER-TANK

A Cold Process Asphalt Emulsion for Making and Repairing Roads

The requirements of a good asphalt emulsion are that it should contain less than one per cent of emulsifying agents; the asphalt particles must be very small and regular in form, so that the emulsion, before setting up, can absorb water without coagulating, thus permitting the use of diluted solution when necessary; and it must be possible to make the emulsion miscible or non-miscible, so that it will coagulate slowly or rapidly, according to requirements. After the distillate has evaporated, the asphalt remaining must retain unaltered all the qualities of penetration, ductility, and binding power it possessed before emulsification. It must also be capable of being produced from asphalts of all penetrations, high or low, and must be capable of standing frost-proof storage for an unlimited time without showing sediment, coagulation or separation.

Colphalt, a chocolate brown cold process asphalt emulsion which turns jet black when set, meets these requirements. It is made by the Colphalt Co. of Ohio, Cleveland, Ohio, from both hard and soft asphalts in slow-coagulating and quick-coagulating solutions. It has great binding strength and is a fluid which can be poured from the bunghole of a barrel and spread with ease; or, if required, the viscosity can be increased or decreased from the consistency of water to that of a heavy cup grease. It does not become brittle in winter or bleed in summer.

ERECTION VIEW OF KENSICO TANK BEFORE BEING ENCLOSED

Newly laid roads can be made more serviceable, as well as waterproof and dust-free, by an application of Colphalt, and old roadways can be built up to a greater degree of serviceability. A drum or two of Colphalt in a truck with a few yards of aggregate will enable one man to quickly repair holes in all types of pavements, whether the road is slightly wet or dry. Such patches are non-skid and will not bleed, warp, soften or become misplaced by traffic. The fluidity of Colphalt carries it deeply into the substratum and binds the lower layers of stone into a solid roadway with the minimum of binder. It can be applied by cheap, unskilled labor and requires no heating, mixing or preliminary preparation.

New York Purchases More Horni Equipment

The Horni Signal Manufacturing Corporation, 515 Greenwich Street, New York, has just secured a contract from the city of New York for furnishing and installing a complete new installation for a 100-circuit central office for the fire-alarm system in the borough of Kings, at 35 Empire Boulevard. The contract price was $42,166. In addition this company has a contract for 2,000 fire-alarm boxes costing $121,105, and 50 complete fire-house sets for the individual fire-house alarms, to cost approximately $11,148.

Only Brick Pavements Have Withstood SUCH WIDESPREAD NON-ACCELERATED TESTS

ACCELERATED tests on paving materials are useful in determining the probable life of a pavement insofar as the tests approximate actual service conditions. Brick pavements have always passed these tests with flying colors.

However, the chance of error in these accelerated tests lies in the fact that the time factor is largely removed. Always, time is an important factor. It brings out faults of chemical instability of materials, if any exist, as well as damage wrought by constantly changing weather conditions.

Only brick pavements have withstood long-term, *non*-accelerated tests on such a widespread scale. These are the brutal tests of actual service for 30 years or more. As tests, they are most severe. And absolutely errorless.

Brick streets laid on an adequate foundation a third of a century ago are generally in good condition today and their upkeep has been low. It is quite common to hear of cities relaying veteran brick on a modern foundation. The result is a fine new pavement at small cost.

For further information, address National Paving Brick Manufacturers Association, 1245 National Press Building, Washington, D. C.

For Example:

Philadelphia, Biloxi, Williamsport, Tonawanda and many other cities are using fine brick pavements laid more than 30 years ago.

VITRIFIED

BRICK PAVEMENTS

FACE THE FUTURE · PAVE WITH BRICK

Do you mention THE AMERICAN CITY? Please do.

Refrigeration for Municipal Buildings

Buildings which house the various departments of a municipality, as well as the institutions administered under municipal jurisdiction, are generally users in some degree of refrigeration equipment. The Vilter Manufacturing Co., Milwaukee, Wis., offers complete machinery and accessories for attaining any desired result in which low temperature or heat transfer is involved. Owing to the fact that this company makes all kinds and types of machinery, one method is never favored above another, and equipment of the proper type is always recommended.

In the water-cooling field, Vilter equipment may be obtained to handle the multiple outlets, bubblers being located wherever convenient, and cold water of a predetermined temperature being immediately available, owing to the constant complete circulation of cold water which eliminates the necessity for letting the water run to make it cold.

In crowded courtrooms or auditoriums or wherever people congregate, Vilter air-conditioning equipment will control the temperature within a range of two degrees. This equipment thoroughly washes the air before delivering it to the room or hall.

In ice-making for a municipal ice plant, morgue, hospital or kitchen, this company offers the complete equipment to make from ½-ton of ice per day up to the largest capacity required, one of the features of this system being the full automatic control. The operating cost of this equipment is very low, the result of correcting the amount of water used in the condensers, which, in turn, selects the right head pressure for any operating condition, thus lowering the power cost.

An unusual development, and one rapidly coming under municipal control, is the ice skating-rink. In installations of this nature, cooled brine is piped through flooded areas, and any hardness of ice required may be maintained automatically and without any more labor than is required to flood the rink and turn a valve.

VILTER TWIN-CYLINDER SINGLE-ACTING AMMONIA COMPRESSOR

DETROIT STREET SWEEPER AND SNOW BRUSH

A Street Sweeper and Snow Brush

A Ford truck equipped with the Detroit brush, made by the Detroit Harvester Co., 5450 West Jefferson Avenue, Detroit, Mich., makes a very efficient, practical and economical unit for general street-cleaning work. This one-man unit will sweep light snow or dirt on streets at a speed of 10 miles per hour and clean a path 5½ feet wide. The truck can be equipped with a special water-tank for laying dust in front of the broom or with a dump body for handling dirt. The brush weighs less than 700 pounds and can be attached to a Ford truck without difficulty.

A permanent, adjustable stop allows the brush to be fixed exactly where the operator wants it to ride, allowing the broom to be raised, but preventing it from digging into the ground. The standard brush is 6 feet long, travels on an angle of 35 degrees and will sweep a space approximately 5½ feet wide. A sprocket is located on each end so that the brush can be reversed at any time. Every broom is filled with 90 pounds of high-grade split bamboo, the bristles being thoroughly boiled before insertion in the core, so as to give them texture and insure good wear.

All roller chain used is of high quality and will not stretch, having a minimum pulling capacity of 9,000 pounds. The brush arm, which is of seamless tubing, is threaded with a right-hand thread on one end and a left-hand thread on the other, making it possible to adjust the tension of the chain without taking the brush out of the holder. Steel sprocket gears are used throughout. The chain and sprocket are enclosed in a sheet metal housing which prevents rope, paper, and refuse of any kind from getting into the gears underneath the chain. The gear bowl housing is made of strong material and is braced to withstand severe usage. The ball bearings have an ample load capacity.

T-section ⅜ x 3 x 3-inch is used in all braces. A U-bolt goes over the front axle at points where the two T-sections cross, thereby eliminating all side motion. Grease cups are provided at all points needing lubrication, and a special power take-off for four-speed transmission is furnished to operate the brush.

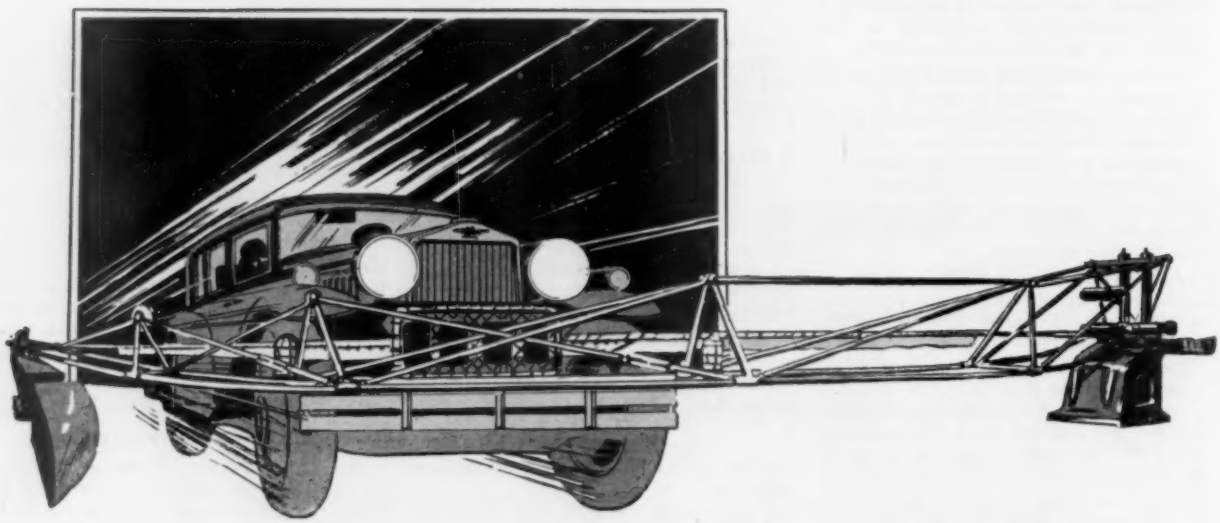
New York Fire Commissioner Visits American-LaFrance

Hon. John J. Doran, Fire Commissioner of New York, Hubert T. Treacy, Chief, Bureau of Repairs and Supplies, Richard J. Marshall, Deputy Chief in charge of repair shops, and Joseph Zengerle, of the Board of Estimate and Apportionment, New York, recently made a trip to the plant of the American-LaFrance & Foamite Corporation, Elmira, N. Y., to inspect the motor fire apparatus which that company is making for the New York Fire Department.

They witnessed demonstrations of the water-tower that is designed especially for use in the high-pressure skyscraper district of New York and inspected the rebuilding of ten pieces of motor fire apparatus that had been damaged in accidents.

Left to right, Richard J. Marshall, Deputy Chief, New York, in charge of repair shops; Joseph Zengerle, Board of Estimate and Apportionment; Hubert J. Treacy, Chief of Bureau of Repairs and Supplies; and Hon. John J. Dorman, Fire Commissioner

STOPS
CARS AND TRUCKS!



The HIGHWAY GUARDIAN...
leaves nothing to the driver's judgment

A SMOOTH, speed inviting road...a heedless motorist---carefree---confidently driving. Suddenly ---the sound of a train...a lowering gate...a frantic effort to stop. But into the gate the car crashes still going 25 miles an hour.

Another fatality? NO!

As if by hands unseen, a brake of tremendous power seems to have been applied. A yielding barrier---THE HIGHWAY GUARDIAN---gradually slows down the car, STOPS it undamaged, passengers SAFE. The Railroad has been protected from the consequences of another crossing accident.

HIGHWAY GUARDIAN protection provides the missing requirement for complete crossing safety. FORCE saves the motorist from himself without injury---keeps him off tracks at train-time.

Installation of THE HIGHWAY GUARDIAN is simple ...on the average costs less than one-tenth as much as grade separation. Without long delay, more crossings can be protected---more accidents prevented.

Bulletin No. 750 tells the interesting story of HIGHWAY GUARDIAN operation. Write for a copy.

FRANKLIN RAILWAY SUPPLY COMPANY, Inc.

NEW YORK CHICAGO SAN FRANCISCO ST. LOUIS MONTREAL

THE B. B. T. TYPE L-8-D LANDING FLOODLIGHT

A New Landing Floodlight

A new landing floodlight designed specifically for series installation at those hard-to-light airports of uneven contours and irregularly shaped landing areas, has been announced by the B.B.T. Corporation of America, Atlantic Building, Philadelphia, Pa. It may also be used at airports where runway lighting only is desired, at small airports, or at airports that desire but a portion of their landing area illuminated at first, the remainder to be added later.

This Type L-8-D floodlight has a 375 mm., 9-element, 180-degree fresnel lens in weatherproof housing, equipped with 16-inch 180-degree chromium reflector, trunnion mounting, and 3-kilowatt, 32-volt lamp. Airport engineers and others who prefer the multiple or distributed system of floodlighting will appreciate the effectiveness and economy of this low-cost light in meeting their requirements.

Additional Water for Los Angeles

An increase of 10,250 gallons of water per minute will be made to the water-supply for the city of Los Angeles, Calif., with the installation of six Pomona turbine pumps, made by the Pomona Pump Co., Pomona, Calif. The Bureau of Water and Power has placed a contract with this company for six Unidrive pumps to be installed at Kearsarge to produce various capacities of water with lifts ranging from 48 to 110 feet.

These pumps will be installed in wells in the Mono Basin, where the city recently purchased valuable water-bearing property. A feature of these pumps is that no oil will be used below the surface, the shafting being water-lubricated by a series of special bearings. The water will be pumped into the Los Angeles aqueduct.

David Hogg & Cia. has been appointed to represent the Pomona Pump Co. in Buenos Aires, Argentine, and Don Frederico Klein has been appointed to represent the company in San Salvador, Central America. Several of these pumps have also been shipped to Australia for municipal service near Nhill, Victoria. Bethune Brothers are the company's representatives in Nhill.

A New Portable Asphalt Plant

The new Chausse Model E-4 portable asphalt repair plant, made by the Chausse Oil Burner Co., 1227 West Beardsley Avenue, Elkhart, Ind., is a complete machine and has all the features of a stationary asphalt plant, such as rotating sand dryer, mechanical mixer, oil burners and measuring devices for all ingredients. It produces genuine hot asphalt for patching asphalt streets, repairing brick or concrete pavements, paving railway crossings or laying mastic floors.

The machine is rated at 150 square yards of 2-inch compacted mix per 8-hour day and will handle any desired mixture from mastic to asphaltic concrete and maintain the formula uniformly. In the machine is bin storage for sufficient asphalt, mineral aggregate and fines to lay 45 square yards of 2-inch compacted mix, which is more than is usually required in the average patching program.

The plant is ruggedly built, the total weight being 9,400 pounds with bin empty. The main side frames are 5-inch steel channels reinforced with hot riveted and welded gusset plates, the vertical members being steel channels and angles, hot riveted and welded, so that the box body is rigid and no deflection nor distortion is possible. The axles are 2½-inch square high-carbon maganese alloy steel and the solid rubber-tired steel wheels are mounted on heavy-duty roller bearings. The front fifth wheel type platform contains an 18-inch low-friction grease-impregnated bearing.

The body is divided into a number of compartments. At the front is the engine, then the bin for fines or lime dust or portland cement, the asphalt heating tank with pug-mill mixer under it, the sand dryer drum, under which is the outlet from the aggregate storage, and at the rear the aggregate bin, under which is the tool heater. Fuel tanks for kerosene are attached to the rear, and an overhead rail for the measuring hopper is attached to one side.

It is possible for the machine to propel itself at a speed of 4 to 5 miles per hour through a direct chain drive to the rear wheel and an individual clutch. Power is furnished by an industrial type, 4-cylinder, 20-horsepower gasoline motor.

Heating is accomplished by four Chausse kerosene vaporizing self-generating burners, requiring a pressure of only 25 to 30 pounds obtained by direct connection from the engine. Each burner will consume 2 gallons of kerosene per hour when burning full on. Two burners are placed under the sand drier drum and provide enough heat to dry normally damp sand and heat it to 350 degrees at the rate of 350 pounds in 5 minutes. Thoroughly wet sand will come out in 10 minutes at a temperature of 350 degrees. One burner is located under the asphalt tank. This is usually shut off after the asphalt is entirely melted, as heat from the adjacent sand drier burners passes close to the asphalt tank and will maintain the required temperature. One burner is located in the tool heater at the rear for heating rakes and other tools.

The sand drying drum is made of heavy boiler plate. It is 34 inches in diameter by 52 inches long and is mounted on a central steel shaft supported at each end in SK self-aligning, dustproof ball bearings. Within the drum are cascading blades which not only agitate the aggregate, but also slowly advance it from the inlet to the outlet.

The pug mixer is 24 inches wide by 43 inches long, with replaceable steel mixing blades and bottom discharge, the blades being fastened to the central 2-inch square steel shaft. The hot aggregate is dumped from the measuring hopper, the fines are admitted from the measuring device, and the hot asphalt is poured from the long measuring trough over the entire length of the mixture. Asphalt is not admitted at one point as from a spout. The mixer works the material over and over, thoroughly amalgamating the ingredients. After remaining in the mixer for three minutes, the batch is ready to be dumped through the bottom gate.

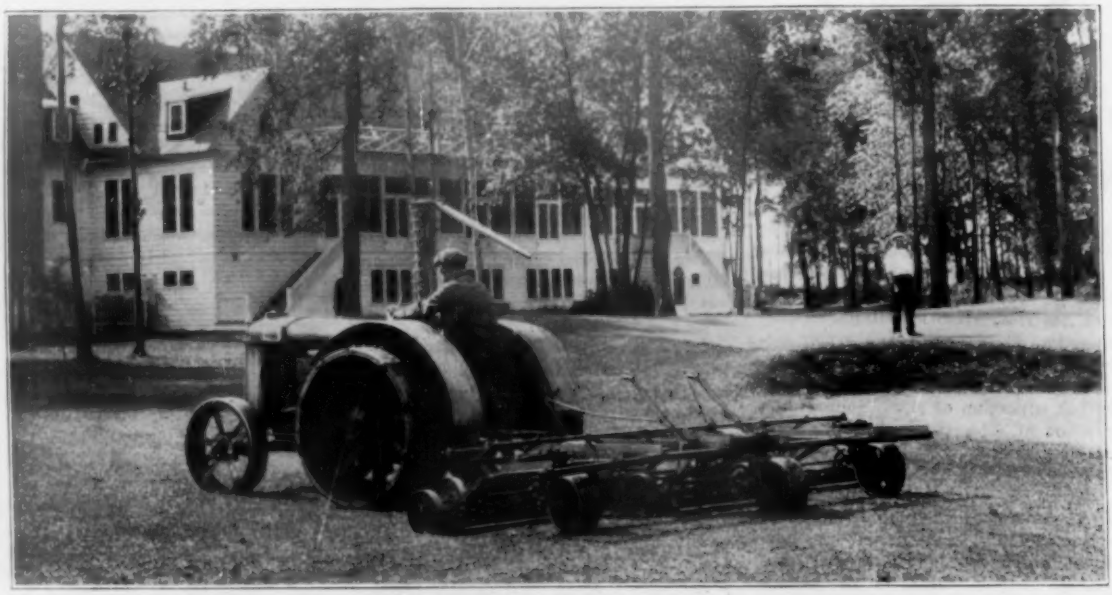
Reclaiming old asphalt during operation of the machine is a valuable feature. It can be cut from the street, loaded into the drier with some new aggregate, heated to 350 degrees, agitated in the mixer, new asphalt added, and returned to the street, providing a marked economy in patching costs. This takes about 20 minutes.

CHAUSSE MODEL E-4 PORTABLE ASPHALT PLANT

THE BULLDOG CUTTING UNIT *is*

Stronger than any other

Lighter than any other



Bulldog cutting units have low wheels and a stocky, rigid frame. They have strength that cannot be equaled by high-wheeled cutting units with their long side frame.

For the same reason (low wheels) the Ideal Bulldog is lighter in weight. The wheels weigh less. The side frame weighs less.

Moreover, because Bulldog cutting units are *pushed* into the work, instead of pulled, they need *no* dead weight to hold them to the ground.

Send for illustrated brochure on the most practical and economical way to keep large grass areas smooth.

IDEAL POWER LAWN MOWER COMPANY
400 Kalamazoo Street, Lansing, Mich.

Branches

413 West Chicago Avenue, Chicago Illinois
237 Lafayette Street, New York City
273 Boylston Street, Boston, Mass.
161 Vester Street, Ferndale (Detroit), Mich.

Canadian Distributors:
Aikenhead Hardware, Ltd., 17 Temperance St., Toronto, Ontario

Dealers in all principal cities

and POWER POWERS for "hand work"

On the jobs of less acreage and more bushes, trees, etc., the roller or wheel-type power mowers are suited. Use the roller mowers to smooth the ground as it is cut—the wheel-type for rough or hilly ground. *Above is the roller type 22-inch cut.*

IDEAL GLASS CUTTING EQUIPMENT

Administering Oxygen in Case of Accident

There are three general classes of accidents which are usually responsible for suffocation—drowning, electric shock, and gas poisoning. It is fundamental that fresh air must reach the lungs to sustain life, so when breathing has ceased, the chest muscles no longer expanding and contracting, or when a partly suffocated person breathes too slowly or does not fill the lungs to normal capacity, some artificial means must be used to produce the proper flow of air to the lungs. The best method for this artificial breathing is the prone pressure method of artificial respiration.

Although the victim of drowning or electric shock has practically been saved when breathing has been restored, the use of the Davis Inhalator, made by Bullard-Davis, Inc., 67 Wall Street, New York, may play a very important part during prone pressure and as an after-treatment. This equipment, complete, weighs only 50 pounds. Only one tank of oxygen is carried in the case, extra tanks being carried in a separate case. When it is necessary to use more than one tank, the additional tank is connected to a fitting on the outside of the case, or a 50-cubic-foot cylinder may be directly connected to this fitting. Each inhalator is adapted to two gas victims, or only one, as circumstances may demand.

The compact carrying case occupies a minimum of space, open or closed, and the breathing-bag may be removed from the case by loosening three fasteners. The flexible hose connection between the bag and the pressure-reducing valve permits the bag's being placed anywhere within 8 feet of the valve. In taking the victim to the hospital and keeping up prone pressure or administering oxygen on the way, the case may be placed beside the driver, while the bag is near the patient in the body of the ambulance. The case may also be closed when in use, as the flexible metal hose will not be pinched by the weight of the lid.

The wrench needed to change the tanks is always at hand, being chained to the case. The necessary instruments are carried in a canvas case and consist of two types of jaw wedge, jaw clamp and a pair of tongue forceps. The breathing-bag is equipped with a safety valve to protect it against undue pressure and there is an indicator at the mask to show whether the gas victim is breathing or not. The Davis pressure-reducing valve is the only valve labeled by the Underwriters' Laboratories. The delicate sylphon bellows, which controls the pressure reduction, is completely covered by the bronze casing, so that the working parts are protected against mechanical damage from the outside. Over this is the mushroom handle of the valve to change the rate of flow of the oxygen.

AMERICAN COMBINATION ASPHALT HEATER

A Combination Wood-, Coal,- or Oil-Burning Asphalt Heater

The American Model C combination asphalt heater is made by the American Steel Works, Kansas City, Mo., is completely combination and can be fired with wood, coal or oil, or with wood and oil together, producing an intense heat and increasing the capacity to almost double. These heaters are made from heavy sheet steel, electric welded throughout, and have an extra-large firebox fitted with removable cast iron grate and protected on the inside with heavy steel removable liner plates set to form an air space. With the half-circle vat and the radius designed outside jacket, a 4-foot stick of wood can be used.

The chassis is made from 3-inch and 4-inch channel iron mounted on heavy-duty springs fitted with alemite shackle bolts. The 30- x 4-inch and 6-inch groove face roller-bearing wheels with sand band hubs give a 15-inch ground clearance. The inside vat is double electric welded and formed to a half-circle with extra-wide anti-splash feature, and fitted with double-hinged rain-tight lids and 1½-inch draw-off valve. The oil burner is of the American Coilless horizontal type, blowing the heat to the rear and permitting it to travel completely up and around the inside vat and return, and thence out the smoke pipe at the front. With this complete heat circulation, the material is in constant motion while melting. The 20-gallon fuel tank gives a full day's supply and is connected to a burner by copper tubing, there being no hose to burn or rot. The flame can be adjusted to any desired temperature. The Models J, C, T, and R are built in 60, 110 and 165 gallons capacities and can be furnished without the oil burner for coal and wood burning.

Mack Transport Exhibit in New York

The general public is cordially invited by Mack Trucks, Inc., 25 Broadway, New York, to visit its Midtown showrooms at 44th Street and Lexington Avenue, to inspect its comprehensive exhibit of motor transport equipment. Because of the many people who have visited the exhibit, its has been decided to keep open house from 9 in the morning to 10:30 in the evening.

The exhibit includes a score or more of trucks of varying tonnage with a wide range of wheelbases; 4- and 6-cylinder busses with bodies for city and interstate service; fire apparatus of every description; one of 17 emergency wagons used by the New York Police Department, and one of the new gas-electric locomotives.

Headley Announces Appointment of General Sales Manager

The Headley Emulsified Asphalt Products Co., Franklin Trust Building, Philadelphia, Pa., has announced the appointment of M. D. Tracy as General Sales Manager. Mr. Tracy brings to this organization an excellent merchandising and selling record extending over a number of years as Sales Manager for the White Co., and later the General Motors Truck Co. Edgar S. Ross, President of the company, states that an extensive national sales and distributing organization will be developed, as well as South American and foreign trade. The offices of the company are in Philadelphia, and the company also has plants at Marcus Hook, Pa., and other sites not yet decided upon.

Millan Made Chief Engineer of Armco

The American Rolling Mill Co., Middletown, Ohio, has announced that E. N. Millan, Chief of Construction, has recently been made Chief Engineer of the company. Before joining Armco in 1916, Mr. Millan was with the Cameragraph Co., of Kansas City, and the Omaha Structural Steel Co., as an engineer. In 1920, he was made Assistant Engineer of Armco and transferred to the Ashland, Ky., plant in 1923 as Engineer in the Construction Department. In June, 1924, he was made Chief of the Construction Department.

DAVIS STANDARD INHALATOR BEING USED ON TWO VICTIMS

A NATION-WIDE SERVICE OF AIRPORT EQUIPMENT

The new Airport Equipment Sales Department of the Curtiss-Wright Airports Corporation provides a nation-wide sales and service organization — to municipalities and organizations planning the equipping of airports and intermediate landing fields.

Recommendation covering any aeronautical lighting problem can be obtained by addressing the New York office of the Curtiss-Wright Airports Corporation.

WRITE FOR CATALOGUE NUMBER 30

CURTISS-WRIGHT AIRPORTS CORPORATION · 29 WEST 57th ST. NEW YORK CITY

AIRPORT LIGHTING - COMMUNICATION AND OPERATIONS EQUIPMENT

TIME to think of TRAFFIC LINES!

There are three things to consider when buying a traffic line marker: The first is, "Does it make a clean visible line?" Second, "Is it quicker than hand method?" Third, "Is it easy to clean?"

Ask yourself these questions, then get full particulars on the traffic line markers you've had in mind—compare them, point for point with the Traf-O-Mark.

The Traf-O-Mark can be equipped with rollers to mark 4-, 5-, or 6-inch lines. Specify the size you want

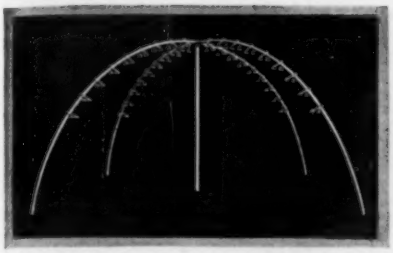
TRAFFIC LINE MARKER LB LITTLEFORD BROS CINCINNATI OHIO

LITTLEFORD

Traffic Line Marker

TRAF-LB-MARK

LITTLEFORD BROS. 457 E. PEARL ST. CINCINNATI, O.



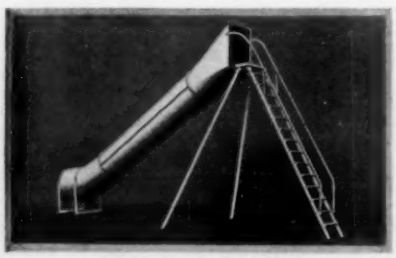
THE HILL-STANDARD TRAVELARC

New Playground Apparatus

Among the new playground equipment offered by the Hill-Standard Co., Anderson, Ind., is the Wobbler, which provides a combination of the thrills given by the merry-go-round and the ocean wave, with an undulating motion added. Other new pieces of apparatus are the Travelarc, on which boys and girls can give vent to their monkeyish instincts; the Horizontal Ladder Stall Bar and the Arbor Mount, two numbers that meet the gymnastic requirements of well-regulated playgrounds; the Tunnel Slide which is made of steel and galvanized Armco iron; all-metal slides and a line of Flagstaffs which feature an exclusive engineering principle.

There is no chance of the chain or rope halyard on the Flagstaff becoming fouled, because the halyard moves over an absolutely smooth oval-shaped circle beneath the ball, protected from the elements. There is no pulley to be oiled, and no moving parts.

This company has also announced a new line of split type clamp fittings which represent a 100 per cent contact with the pipe wall, instead of a contact of from 2 to 50 per cent. No drilled or threaded pipe is used, and distortion of the pipe is impossible, insuring the continuous relationship of pipe and fitting.



THE TUNNEL SLIDE

Joslin Absorbs Graphic Arts Sign Company

Announcement has been made of the purchase by the A. D. Joslin Manufacturing Co., Manistee, Mich., of the entire business of the Graphic Arts Sign Co., Inc., of Grand Rapids, Mich. The name of the Graphic Arts Sign Co. will be kept as a division of the Joslin Co. This company makes an inexpensive, but very durable, line of danger, zone, traffic and stop signs. Because of the increased facilities due to the consolidation of these companies, they are now able to offer to municipalities a wide range of signs and prices.

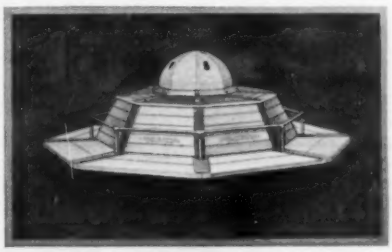
A New Street-Lighting Bracket

A new bishop crook bracket for street-lighting installations has been announced by the General Electric Co., Schenectady, N. Y.

This bracket has malleable iron pole plates in place of the usual cast iron ones and also has two lag pole plates which allow an adjustment to compensate for any rake in the wooden pole on which the bracket may be mounted. The malleable iron plate has two cap screws that pass through the upper support and set into clearance holes in the pipe, permitting the pipe to pivot at this point. The bottom of the lower support has a radius with the center swung from the pivoting screw. A clamping nut and washer thread onto the end of the pipe, securely clamping the pipe at any desired location.

Traffic Surveys and Signals Changes Name

Traffic Surveys & Signals, Inc., has announced a change in the name and office location of the company. The new name is National Traffic Products, Inc., and the company now has offices at 1456 Penobscot Building, Detroit, Mich.



THE HILL-STANDARD WOBBLER

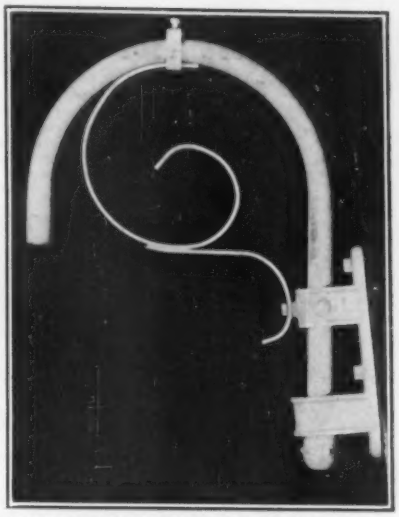
Thickness and Weight of Cast Iron Pipe

Apparently it has been the general belief that deLavaud pipe is manufactured only in the thicknesses and weights prescribed in the United States Government specifications, so the United States Pipe & Foundry Co., Burlington, N. J., has announced that it is making and constantly furnishing this product in strict accordance with the thicknesses and weights of the American Water Works Association and American Gas Association specifications. This company is also equipped to manufacture any thickness or weight which may be required.

Steel Forms for Concrete Manholes

No bolts or clamps are used in the steel forms for concrete manholes made by the Hotchkiss Steel Products Co., Inc., Binghamton, N. Y., all the sections being held together with interlocking keys. The inside and the outside forms are each made in six sections of 11-gage steel, allowing the form to be easily and quickly assembled and dismantled. The top or cone of the form is welded to any height of cylindrical section desired without additional cost. By using different combinations of panels any height of manhole may be made. Slots are provided in the inside form for steps 12 inches apart.

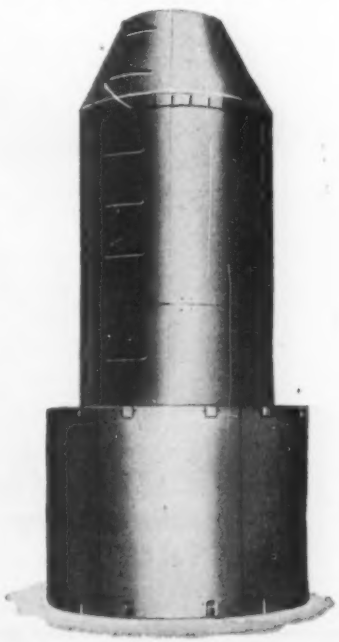
Any panel may be removed without disturbing the rest of the form. It is not always necessary to use the outside form, as, when the excavation is made true, this serves the purpose very well, although more cement is required. The inside cylindrical sections of the forms are made 4 feet in diameter and in heights of 1, 2, 4 and 5 feet, while the outside sections are made 5 feet 4 inches in diameter and the same heights.



THE NEW BISHOP CROOK BRACKET ADJUSTED TO A LEANING POLE

Fertig Now Director of Research for P. T. L.

The Pittsburgh Testing Laboratory, Pittsburgh, Pa., has announced the appointment of George J. Fertig as Director of Research and Chemical and Physical Laboratories of the Southern District, with offices in Birmingham, Ala.



HOTCHKISS STEEL MANHOLE FORMS

Clean Streets Need Not be a Budget Burden

Mr. Dean Noyes, Supt., Dept. of Street Cleaning of Omaha, says: *"Detroit Sweepers are among our most valued pieces of equipment. Their upkeep is so small that we do not enter it into the cost of maintenance."*

Detroit Street Sweeper and Snow Brush

Adaptable for use with Four-Speed Transmission Ford Truck

The Ford Truck equipped with the Detroit Brush makes a most efficient, practical and economical unit for general street cleaning work. Municipal officials, state and county road commissioners, transportation engineers, plant traffic men will appreciate this labor-saving, one-man unit. *It will sweep light snow and dirt on streets at a speed of ten miles per hour and sweeps a clean path 5½ feet wide.* The truck can be equipped with a special water tank for laying dust in front of broom or with dump body for handling dirt. The Detroit Brush weighs less than 700 pounds and can be easily attached to the Ford Truck. Complete installation instructions furnished with each unit.

DETROIT POWER TAKE-OFFS

We manufacture a full line of POWER TAKE-OFFS for the Ford Four-Speed Transmission. A model for every need. Tell us of your requirements.

DETROIT HARVESTER COMPANY

5450 West Jefferson Avenue DETROIT, MICHIGAN

Village of Grosse Pointe

January 7, 1930.

Truck Co.,

Just a few words about the action of your Model SLT-144 four wheel drive truck equipped with the V type snow plow as we observed it in action on the streets of this and the other Grosse Pointe Villages just recently on the occasion of the very heavy snow storm.

The snow was about twelve to fourteen inches in depth on the level average and many drifts were from ten to five feet deep. We had cleared the streets free from snow but had left a windrow at the curb which was packed very hard and partially frozen, this being about six to eight feet in width and from three to five feet in height.

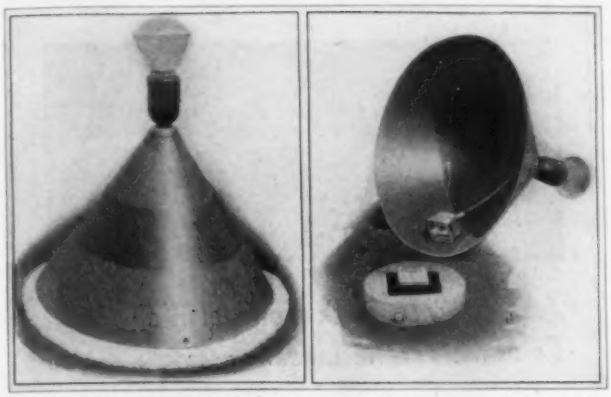
Your outfit had no difficulty in plowing this windrow down to bare pavement; operating in second, third and high speed in high gear range at a speed of from three to fifteen miles per hour. We were able to discontinue using the heavy tractor and grader with which we had been doing this work prior to the arrival of your truck. It was not necessary at any time to use the low gear.

I operated the truck myself for a matter of nearly an hour and in this time cleaned up probably five miles of streets in the condition noted above. I have not yet seen any truck-plow that reached yours in real results and certainly recommend it to anyone.

Clerk.

FREEMAN (4) *wheel drive* **TRUCKS**

FREEMAN MOTOR CO.
DETROIT, MICH.



THE CURTISS CONE TURNOVER TYPE BOUNDARY LIGHT: AT LEFT, AS INSTALLED; AND AT RIGHT, TIPPED OVER AND DISCONNECTED

Turnover Type Boundary Lights for Airports

So many serious accidents have resulted from aircraft striking boundary lights supported by pipe standards imbedded in the ground that the Curtiss-Wright Airports Corporation, 29 West 57th Street, New York, has developed the Curtiss Cone turnover type boundary lights, which embody many safety features.

The unit consists of a high-voltage series cut out with weatherproofing spring cover, cutout upper section attached to a high-voltage heavy super-service cable and cable clamps, heavily enameled sheet-metal cone of standard Department of Commerce markings with a 6 by 6-inch opening in the side covered by a flush weatherproof door. Three metal stakes are supplied and may be pushed lightly into the ground through metal eyelets in the cone to prevent moving from minor forces. A series casing, socket and film cutout are supplied with a short nipple for attaching to the cone. Either prismatic or cylindrical globes are supplied. The 600-lumen lamps are used in the clear or amber globes, and the 1,000-lumen lamps in the red or green globes. This unit with the subsurface wiring meets the rating requirements for voltage limits without the use of safety coils or transformers at a material saving in installation cost.

New Birmingham Plant for Chicago Bridge & Iron Works

The Chicago Bridge & Iron Works, Chicago, Ill., has purchased the Reeves Bros. Co. plant at Birmingham, Ala. This plant, which is located on a 40-acre tract that was included in the purchase, and which has a capacity of 4,000 tons per month, will be used to fabricate steel for erection at southern points, for shipment to the Pacific Coast by water, and will furnish additional facilities for handling export work.

McCracken and Mitchell Directors of Airport Development & Construction Co.

At a special meeting of the Board of Directors of the Airport Development & Construction Co., Mitten Building, Philadelphia, Pa., William P. MacCracken, Jr., former Assistant Secretary of Commerce for Aeronautics, and John J. Mitchell, Secretary and Treasurer of National Air Transport, Inc., were elected to fill the two vacancies on the Board. Mr. MacCracken is Chairman of the Board of Directors of the New York, Rio & Buenos Aires Line, Inc., and General Counsel of the Goodyear Zeppelin Corporation and the Western Air Express. Mr. Mitchell is a Director of Curtiss Airports Corporation, National Aviation Corporation, Douglass Aircraft Co., and several other large aviation enterprises.

Airport Development & Construction Co. engages in a national consulting, designing and building service in the development of airports.

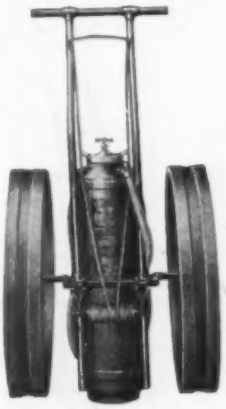
Morris Machine Works Moves Chicago Office

The Morris Machine Works, Baldwinsville, N. Y., has announced the removal of its Chicago office to Room 716, Builders Building, 228 North LaSalle Street, Chicago, Ill. The new office will be in charge of F. S. Salchenberger.

A Portable 40-Gallon Fire Engine for Airports

A new Foamite 40-gallon engine, known as the Wideway, and designed especially for guarding fire hazards of airports, oil-producing properties, estates, institutional grounds and other out-of-door risks, has just been announced by the America-La-France and Foamite Corporation, Elmira, N. Y.

One of the features of this new engine is its construction, which makes it easily portable even under decidedly unfavorable conditions. For example, the engine is fitted with a wide, sturdy carriage, immune to jars and jolts caused by passing over rough or furrowed ground, railroad tracks, ditches, stumps, etc. The wheels are made of steel and are fitted with wide 8-inch treads which give traction through mud and snow and allow the engine to be pulled over obstacles which the ordinary device would be unable to surmount. Frictionless turning of these wheels is insured by ball bearings in each hub. Long pulling handles, supplemented by pulling ropes, further add to the ease of portability.



THE NEW FOAMITE WIDEWAY

The new Wideway engine produces approximately 300 gallons of fire-smothering Firefoam at an effective range of from 50 to 60 feet when it is inverted.

New Manager for Truscon Transmission Structures Division

The Truscon Steel Co., Youngstown, Ohio, has announced the appointment of Charles A. Haynes as Manager of the Transmission Structures Division. This division embraces the application of Weltrus poles, H-frames and towers to electrical transmission and distribution, substations, trolley lines, street lighting, flood-lighting, pipe line supports, etc.

THE LATEST ELGIN MOTOR PICK-UP SWEEPER, WHICH IS NARROWER, LOWER AND SHORTER THAN THE OLDER MODELS, YET HAS A GREATER CLEANING CAPACITY AND OPERATES AT 7 MILES PER HOUR

The Solution of Your Traffic Problems

Horni

BRIDGE WARNING LIGHT

Cape May County, N. J., has installed 25 of these lights

HORNI SIGNAL MFG. CORP.

515 Greenwich St., New York, N. Y.

Manufacturers of Traffic Signals, Street Directional Signs, Fire Alarm and Police Call Systems

Descriptive Literature furnished on request

An Easier, More Economical Way To Mark Traffic Lines:—

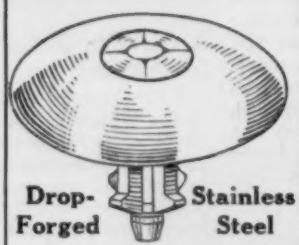
Let us send you our illustrated circular telling about the NEWAYGO Line Marker—how it works, how easily it is operated and moved about, how it cuts operating costs, and what users think about it. It's low in first cost, too, because we sell almost entirely by mail, eliminating commissions and other sales expense.

NEWAYGO ENGINEERING CO.

NEWAYGO, MICHIGAN

ZONE DOMES

The Perfect Traffic Markers



Drop-Forged Stainless Steel

YEARS ago New York City put our Zone Domes to work at 5th Avenue and 42nd Street. They are still there working 24 hours a day and proving their outstanding superiority. These Lock-Plug Traffic Markers will give the same best service in your city.

Always bright and conspicuous, never any trouble, they cost nothing for upkeep and outlast the pavement.

Write for sample, prices and full details.

THE KILBORN & BISHOP CO.

190 Chapel Street, New Haven

THE PEERLESS MOWER SHARPENER

THE Peerless Lawnmower Sharpener is a wonderful but simple invention that sharpens all makes of power and hand lawnmowers, scientifically, quickly, perfectly; does the work as nothing else can. It grinds a perfect bevel and clearance—no more hard-running mowers—no more pulling and tearing of turf. Operated by 1-3-hp. motor—attach it to your lamp socket. Special Grinding Wheel Attachment for sharpening grass shears, sickles, scythes, axes, etc.

The Fate-Root-Heath Co.
908 BELL STREET
PLYMOUTH, OHIO

Hundreds of Golf Clubs, large and small, now use the Peerless Lawnmower Sharpener.

Skate Sharpener Attachment sharpens all makes of skates—including hockey. Earns money all the year round. Will save its cost the first season. Write for Catalog and list of users.